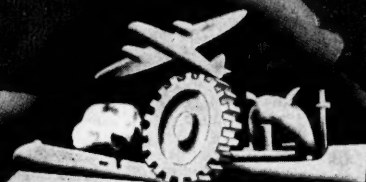


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MANUFACTURERS RECORD



STACKS

The South's Guests

The South is glad of the privilege and responsibility of being host to a large proportion of the young men now in the military services who are stationed in its many camps and training schools.

From the ranks of such men will come the nation's leaders of tomorrow. During their stay they will witness the activity of an industrial empire now building, which contains America's greatest promise of new wealth creation.

The South greets these future bearers of liberty's torch and extends to them its utmost hospitality.

MARCH 1942

MACKLIN GRINDING WHEELS



Macklin Wheels Are Uniform

Uniform grinding wheels, after most rigid control of previous operations must be carefully and skillfully finished to exact micrometer limits on the face, sides and arbor hole. Special new and modern lathes operated by experienced craftsmen insure uniformity of size in each and every high quality MACKLIN grinding wheel. Protect Your Production with grinding wheels that are always uniform.

Ask for Macklin Engineering Service.



MACKLIN COMPANY

Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.

Distributors in all principal cities

Sales Offices: — Chicago — New York — Detroit — Pittsburgh — Cleveland — Cincinnati — Milwaukee — Philadelphia

Look Beyond the TRADE-MARK ...Look at the MOTOR!



YES, we are proud of the F-M trade-mark. But we are far more proud of the kind of motor on which that trade-mark appears. We know, and you know, that it's the motor and not the trade-mark that runs machinery.

That's why we ask you, when buying, to look beyond the trade-mark—*look at the motor.*

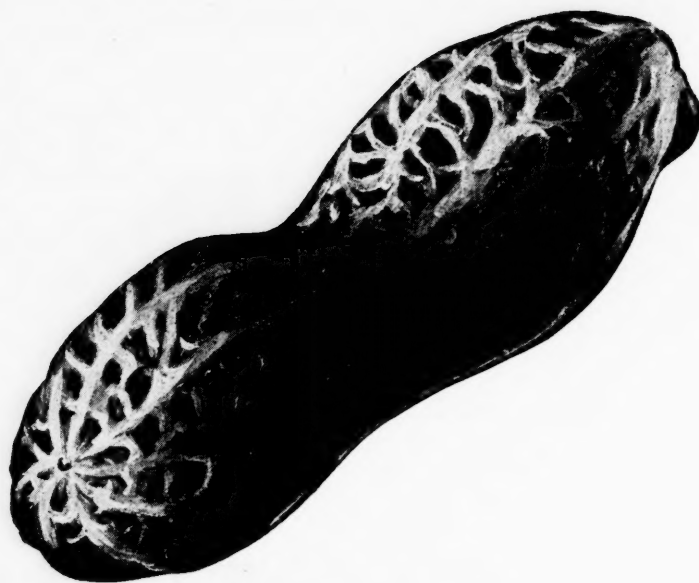
Look at the construction of a Fairbanks-Morse Motor point by point. Compare the Copperspun Rotor with any other type of rotor. Then ask yourself whether you want windings centrifugally cast of *COPPER* or of some less suitable material.

We believe that you know motor quality when you see it. That's why we ask you to look at the MOTOR. A post card or telephone call will bring you a demonstration. Fairbanks, Morse & Co., Dept. C93, 600 S. Michigan Ave., Chicago. Branches and service stations throughout United States and Canada.

Copperspun
Patented

FAIRBANKS • MORSE  MOTORS

DIESEL ENGINES ELECTRICAL MACHINERY MAGNETOS RAILROAD EQUIPMENT WASHERS-IRONERS



GOOBERS

on the march

Formerly considered hardly more than something to eat at circuses and ball games, the once-lowly goober has become an extremely valuable many-purpose vegetable, its importance underlined by war-time needs.

It provides oil for soap, ointments and butter-substitute, glycerine for explosives, and protein for the diet. It stands ready to jump into the breach in case palm-oil supplies from overseas are cut off, or if the meat supply runs short. And every pound of the more than 750,000 tons of peanuts grown in the United States is raised South of the Mason-Dixon line.

Peanuts are typical of the South's increasing agricultural importance to the nation. The South no longer concentrates on two crops—cotton and tobacco. Today,

these two staples together comprise only about one-half the total income derived from all farm crops. Livestock, fruits, truck crops, sugar cane, grain and dairy products have all shown marked increases in value during recent years, and the output of fertile Southern fields is being tuned to the demands of both normal and wartime consumption.

Bethlehem Steel Company has long been an important supplier of steel for agriculture. In addition to steel for implements, Bethlehem supplies agriculturists with fence, barbed wire and fence posts; nails, staples and bale ties; galvanized steel sheets for roofing and siding; steel pipe; reinforcing bars for concrete construction.

Bethlehem's Sparrows Point Plant, near Baltimore, is strategically located to supply many of the steel needs of Southern farmers with minimum delay—as well as the manifold requirements of the entire Industrial South.

BETHLEHEM STEEL COMPANY



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Volume 111, Number 3

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MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

Published Monthly by the
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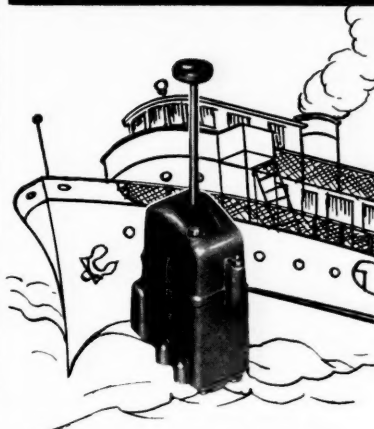
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Member A. B. C.

Entered as second class matter at the postoffice, Baltimore, Md., U.S.A., under act of March 3, 1879. Volume 111, Number 1 Monthly

MARCH NINETEEN FORTY-TWO

A... Pneumatic Control System



for Marine Service

For application to any type of marine vessel, the Westinghouse Air Brake Company has evolved a distinctive pneumatic control system. By means of operating valves, piping, and air cylinders, it provides remote control, from either the engine room or bridge, for engine starting and stopping, throttle manipulation, and driving clutch engagement. All rods, levers, and linkage, common to mechanical control systems are eliminated. Operation is effortless. Action is prompt and positive, permitting quick change from forward to reverse. Manipulation is very flexible, giving precise control of engine throttle and boat speed. All devices are especially designed for marine service.

...

We also build air compressors and accessories, including the "Pneuphonic" signal horn, for shipbuilding yards, vessels, and harbors. Compressors are available for any type of drive—motor, steam, shaft, gas engine.

Westinghouse . . .
AIR BRAKE CO.
Industrial Division
PITTSBURGH, PA.

Designers and manufacturers of
pneumatic control equip-
ment for 72 years.

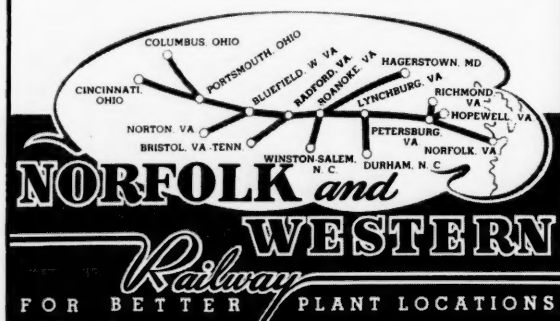


Reconnaissance

Before troops are moved into a territory, it is painstakingly reconnoitered — investigated for all possibilities. The same practice should be effectively applied by industry seeking plant sites.

Before you decide on any territory for your plant — new or relocated — investigate the territory served by the Norfolk and Western Railway. Here is a land of fertile valleys, broad fields, wide rivers, and deep forests — truly the favored land, where there is plenty of room to grow. A land rich in basic raw materials, plenty of native-born labor, an abundance of power from coal and water, an equable climate, and quick access by precision rail transportation to great producing and consuming markets between the Midwest and the Virginias and Carolinas, and between the North and the South

The Norfolk and Western's Industrial and Agricultural Department at Roanoke, Va., has had years of experience in successful plant location. It is a reliable source of the facts you will want. All inquiries are treated with the utmost confidence.



As the Editor Sees It

Proof of the Pudding . . .

With the avalanche of news affecting business coming out of Washington these days, it is hard to divert one's gazes from the capitol long enough to see the amazing business developments that are taking place elsewhere throughout the country.

It is truer now than ever before that most business news STARTS in Washington, but it is just as true now as it has ever been, that the converting of plans into accomplishment is being carried on in every part of the country. We must not keep our eyes so closely focused on the men who sow the seeds of production that we miss seeing and judging the crops which those seeds should produce. Only by observing how ideas conceived in Washington, develop and expand in practice throughout the land, can we learn lessons that will prove of value to our own communities and our own businesses.

Record Cotton Consumption

Consumption of cotton in January totaled 945,909 bales which is not only 101,070 bales more than the 844,839 bales consumed during January, 1941 and 214,116 bales greater than the January 1940 consumption, but is the second largest monthly consumption on record. October, 1941 was the largest with 953,600 bales consumed.

Total actual consumption for the first half of the current cotton year beginning August 1, 1941, amounts to 5,386,363 bales or an estimated annual consumption of 10,772,726 bales. This is more than the entire cotton production for five separate years since 1920 and the six-month consumption surpasses that consumed in the 12-month periods of 1930-31, 1931-32, and 1934-35. Never has our consumption exceeded 7,950,000 bales in 12 months.

If the ensuing twelve months consumption be based on an average of the January total, the aggregate of 11,359,908 bales would come within half a million bales of equaling this country's total average production for the past three years.

Small Business

Addressing the final session of the Defense Clinic of the American Bankers' Association on March 6th, Mr. Charles B. Henderson, chairman of the Reconstruction Finance Corporation, stated that the war pro-

duction program creates the alternative of more than doubling the facilities of the larger companies or of using thousands of small business concerns not now engaged in war work.

On the same day that Mr. Henderson made his talk we received the following letter from a reader of the MANUFACTURERS RECORD. We reproduce it in full.

Editor,

MANUFACTURERS RECORD:

We are not at present doing any war production work, but feel that our facilities can and should be used. Our past efforts to be of service have met with failure, probably due to the small size of our plant and the immensity of the prime contracts.

As you can readily see from the list of our equipment, we are in a position to do certain types of machine work on medium size castings.

We sincerely hope that we can be of service in this great struggle, and that our shop can be fitted into the war production set-up that is being undertaken by the country.

It is time for government to stop thinking of business as a small group of large companies and realize the truth that by far the greater part of American business consists of hundreds of thousands of small and medium sized organizations. Big business, so called, is the exception and not the rule.

Only by recognizing this truth can government use the productive resources of this country effectively for war and plan constructively for a post war economy that is neither fascist nor communist.

Rubber from Natural Gas

Dr. E. P. Schoch, professor of chemistry at the University of Texas, is reported to

have discovered a process for making synthetic rubber from natural gas. According to his discovery, rubber is made by the electrical treatment of natural gas whereby acetylene, and subsequently butadiene is produced as the basic source.

Dr. Schoch says there is no question as to the practicability of his process though he frankly admits that there are certain obstacles that must be removed before large scale production for commercial use can be assured. With the removal of these obstacles, and with adequate financing, Dr. Schoch believes that his synthetic product will go a long way toward compensating for the loss in rubber imports lost to us by the Japanese invasion of Malaya and the East Indies.

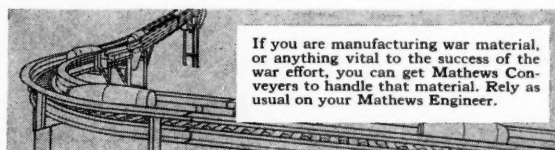
(Continued on page 8)



BLOCKADES AREN'T LIMITED TO THE SEVEN SEAS

● The most serious blockades in America's war effort today are those occurring in the great plants producing war materials. Delay in getting parts and assemblies from one machine to the next, and the lack of a definite production pace tying together all departments, is keeping production down. Mathews engineering hours are devoted entirely to the solution of these problems. Mathews Conveyers are breaking these blockades by speeding materials from one machine to the next, through inspection and into cars or ships. The success of our production depends upon our keeping materials moving. Mathews Conveyers are moving them.

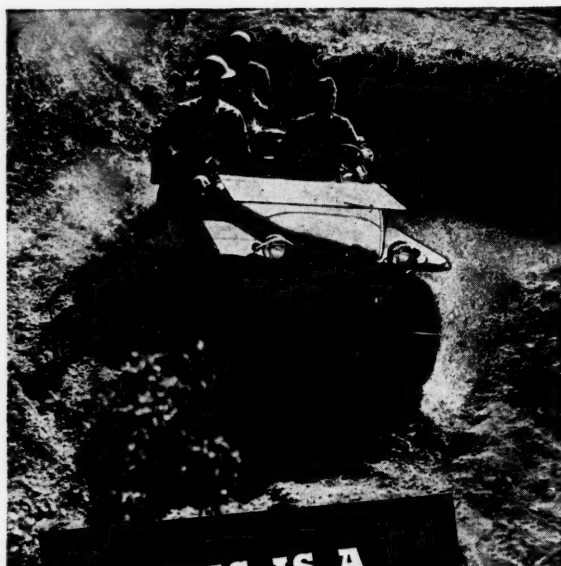
MATHEWS CONVEYERS FOR MECHANIZED PRODUCTION



If you are manufacturing war material, or anything vital to the success of the war effort, you can get Mathews Conveyers to handle that material. Rely as usual on your Mathews Engineer.

MATHEWS CONVEYER CO.
ELLWOOD CITY, PA.

A rough-and-tumble Army "Jeep" made of ARMCO Steel



**THIS IS A
SHEET-STEEL
WAR!**

Back in '17 ponderous equipment and slow-moving stabilized fronts were enough to win wars.

Not so today. *Speed* — on land, on sea and in the air — is America's watchword. So it is only natural that tremendous tonnages of ARMCO iron and steel sheets are used in today's light, fast, mobile equipment.

Most of ARMCO's production is behind America's drive to victory. Troop-carrying trucks and combat cars, parts for aircraft and ships, portable runways and drainage for airports, air-raid shelters, mess equipment and powder cans are only a few of the many uses.

And even as the ARMCO-invented continuous mills roar defiance to the dangerous challenge, ARMCO's Research Laboratories are working on new steels for these grim days as well as for the days of peace.

Meanwhile, if your friends at ARMCO must say "no" or "perhaps later" to normal orders, remember ARMCO sheet metals are being used for America today so there will be *Americans* to use them tomorrow. The American Rolling Mill Co., 491 Curtis St., Middletown, Ohio.



**A TRADEMARK
KNOWN TO MILLIONS**

As the Editor Sees It

(Continued from page 7)

Bauxite

News comes to us that the old bauxite mines near Rome, Ga., are being worked again. It was at these mines that bauxite, the mineral ore from which aluminum is derived, was first discovered in the United States in 1888.

More than half of our normal national requirements for bauxite have been imported from foreign sources, many of which have been cut off by the war. This emergency shortage points the finger of necessity at an abandoned pioneer source still capable of further output.

Population Drift

The final 1940 census figures reveal the fact that for the first time since statistics on population in the United States have been collected there is a larger white population in every southern state than there is negro. Mississippi was the last state to acquire a white majority. In South Carolina the proportion of negroes to whites is eight to ten and in Virginia only one to three. Northern city life has attracted the negroes while southern industrial development has attracted the whites. We like to think that both races and both sections are benefiting by this shift.

Expanding Profits?

Compilations of corporate earnings for 1941 show moderate increases in aggregate net income over the previous year. These compilations, however are apt to be misleading because they are based on figures for the entire year.

A truer picture of the trend of corporate earnings is to be had when they are seen quarter by quarter during 1941. Such a breakdown shows that profits, stimulated by the defense program, did increase during the first three quarters of the year but it also shows a definite decline in profits for the fourth quarter. This seems to indicate a downward trend that may continue during 1942.

From the above we draw the conclusion that it is far from safe for business men to base wage scales and tax policies on the assumption that profits are still expanding. Every care should be exercised to conserve assets and preserve financial stability.

MANUFACTURERS RECORD FOR

What Can I Do To Help?

Under the head of "What Can I Do To Help?" in the current issue of *National Aeronautics*, Mr. Gill Robb Wilson, President of the National Aeronautic Association lists his idea of war's modern ten commandments for civilians. We believe that they contain much good, old-fashioned common sense and are worth reprinting.

1. Thou shalt keep thy mouth shut.
2. Thou shalt stay out of Washington; both thou and thy conventions and thy car and thy family and thy family's family and all thy correspondence and thy personal problems; none of these shalt thou bring to Washington for they clutter up the works.
3. Thou shalt not harass thy son because he hath not a commission; neither shalt thou make him to feel the service of an enlisted man to be beneath his college education and thy colonial background; neither shall these things be held against him by other enlisted men if thou dost not make of them an abomination.
4. Thou shalt not hoard; only the squirrel hoardeth and this he doeth because he is a squirrel.
5. Thou shalt not get ants in thy pants to put on a uniform only because thou art vain and hast no courage to hoe thy row in the place where thou art most needed.
6. Thou shalt walk; even thus shalt thou aid to save gas and rubber; thus shalt thou redeem the price of thy girdle and thy doctor's bill and thy very hide.
7. Thou shalt not strike; neither shalt thou walk out; neither shalt thou lock out; neither shalt thou sit down on the job; in order that thy days may be long in the land which the Lord thy God hath given thee.
8. Thou shalt not in thy confidence measure the seas for verily they who hath thought to hide behind the seas are full of prune juice.
9. Thou shalt not fret because of evil-doers for thou hast not done so well thyself.
10. Thou shalt not lose faith; thou hast lost nothing beyond recovery if thy faith be not lost.

In the Eye of the Beholder

It is hard for us to believe that business men are the dyed-in-the-wool scoundrels or the gross incompetents that they are painted—or should we say smeared?—by envious political philanderers.

Are they defrauding the public and exploiting their workers if their business shows a profit?

Are they failures, and the economic system under which they operate outmoded, when their business shows a loss?

Are they seeking special, selfish favors for their businesses when they volunteer their services to their country's government?

Or are they self-centered and unpatriotic when they devote their time and energy to running their own companies, the job they know how to do best?

We are on intimate terms of mutual confidence with many men in many lines of business. Without exception, those who are successful believe, as Poor Richard did, that honesty is the best policy. They also believe in the 10th commandment.

MYERS

BUILDS PUMPS FOR EVERY PURPOSE

Myers Pumps are suitable for industrial as well as domestic, agricultural and other applications.

For example, there are Sump Pumps for intermittent or emergency drainage service — Centrifugal Pumps for movement of acids, hot and cold water, brine and other liquids — Plunger and *EJECTO* type Pumps, capable of handling water to 9,000 GPH, for pressure tank and gravity service.

Exclusive design and construction features insure low operation cost and freedom from costly shutdowns and long interruptions for repairs.

Our Engineering Department will be glad to aid you on your Pumping problems. Write. No obligation, of course.

Fig. 2633
Shallow Well
Plunger Type

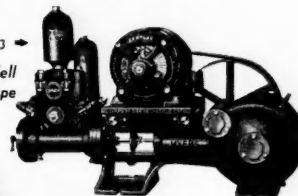


Fig. 3224
Deep Well Plunger Type



Fig. 3102—Double
Acting Cylinder

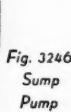


Fig. 3246
Sump
Pump

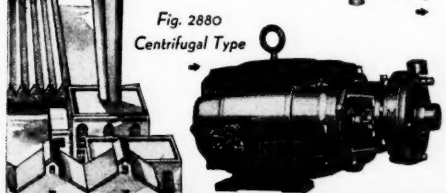


Fig. 2880
Centrifugal Type



Fig. 3313
EJECTO Type
for Shallow
and Deep Wells

THE F.E. MYERS & BRO. CO.

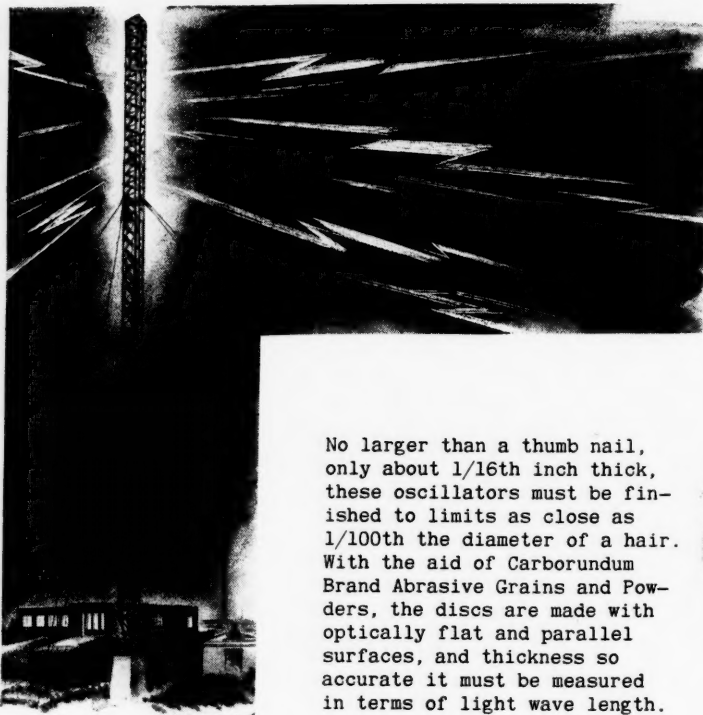
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ASHLAND, OHIO

**PUMPS • WATER SYSTEMS
SPRAYERS • HAY TOOLS
DOOR HANGERS**

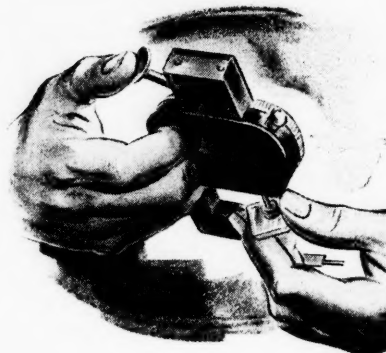


"The next number will be
free with 6 box tops, followed
by occasional showers"



Doubletalk? No, it's how radio would sound if stations couldn't be kept on their assigned frequencies. The problem was licked once and for all when engineers discovered how to regulate radio frequencies with a tiny disc of quartz crystal, the thickness of which governs the length of the waves. Precision cutting, grinding and finishing of the quartz, a process Carborundum helped pioneer, makes today's accurate control possible.

No larger than a thumb nail, only about 1/16th inch thick, these oscillators must be finished to limits as close as 1/100th the diameter of a hair. With the aid of Carborundum Brand Abrasive Grains and Powders, the discs are made with optically flat and parallel surfaces, and thickness so accurate it must be measured in terms of light wave length.



In the development of many modern aids to living, abrasives have played a vital part. And Carborundum skill and knowledge have made much of this progress possible. Perhaps these facilities can help you solve your problem. The Carborundum Company, Niagara Falls, New York.

Carborundum is a registered trade-mark of and indicates manufacture by The Carborundum Company.



Vast Plant Put Into Operation In Record Time

Motors Roll Off Line
Just 243 Days After
Start of Factory

Signalizing the launching of mass production of B-26-built aircraft engines in the immense Heirbau plant just 243 days after the project was launched, the first big power unit designed for an American bomber roared on test blocks yesterday.

It rolled off the production line a few days ago, fore-runner of thundering thousands which will comprise a major contribution to vastly increased United States air power.

Total Cost \$41,000,000.

The Heirbau plant, one of the largest aviation air craft manufacturing establishments in the world covers 1,600,000 square feet. Cost of the building and the necessary tooling, plus cost of tooling. The 1200 engine division, the I hut plant, totalled \$41,000,000.

The plant was able to start productive operations in all its main divisions within eight months from the time construction was started.

Sets Speed Record.

Curtice said construction of the Heirbau plant and conversion of the I hut plant were considered by military authorities to be top performance for speed with which automobile manufacturers have been able to swing into the tremendous wartime jobs assigned to them.

... aided by
Featherweight PRECAST
CONCRETE ROOF
SLABS

... organization...
The plant was able to
productive operations in all its
divisions within eight months
the time construction was started.

Sets Speed Record.

Curtice said construction of the Heirbau plant and conversion of the I hut plant were considered by military authorities to be top performance for speed with which automobile manufacturers have been able to swing into the tremendous wartime jobs assigned to them.

SCORES of defense plants around the country are enabled to conserve valuable time and labor and to get into production with minimum delay, because Featherweight Precast Concrete Slabs are used for the roof deck. On this particular plant, there are over a million square feet of Featherweight Concrete Slabs.

This simple construction requires only three moves to complete the roof—the slabs are speedily laid in any weather—the joints are cemented—the weatherproof covering is applied immediately thereafter. The occupant can be moving in while the roof is being finished.

Once in place, this roof deck is there to stay. Because it is made of perfect, factory-precast concrete, it is impervious to all effects of smoke, fumes, cinders, heat, cold, snow, or rain—will not rot, rust or disintegrate. There is no painting—no repairs—no replacements. A Federal Roof is sound construction—sound investment.

PROMPT SERVICE FROM OUR
BIRMINGHAM, ALA. PLANT

Made, Laid and Guaranteed by

FEDERAL-AMERICAN CEMENT TILE CO.

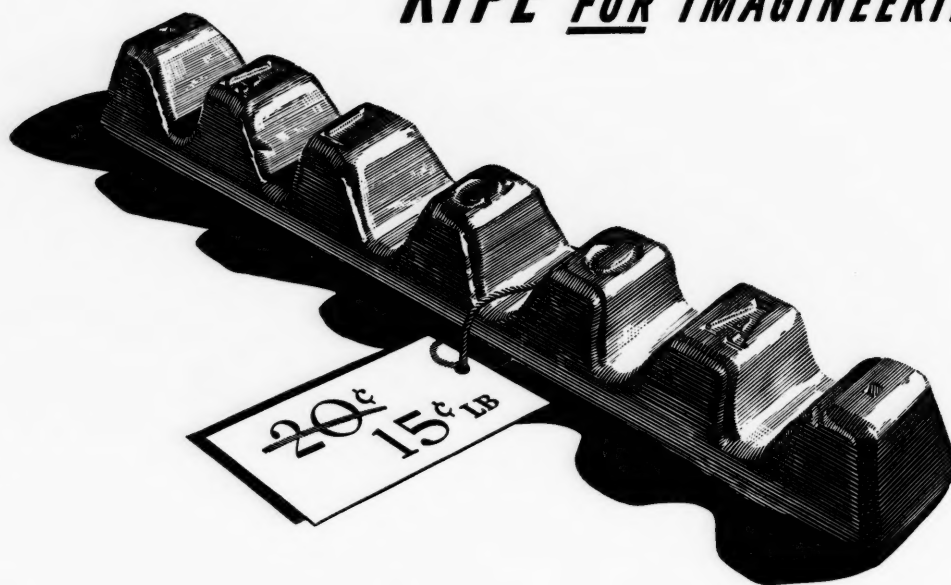
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For Over Thirty Years

Chicago, Illinois
Sales Offices In Principal Cities

Plants near: CHICAGO—NEW YORK—PITTSBURGH—BIRMINGHAM

★ LOWER PRICES ★

—MADE BY IMAGINEERING
***RIPE** FOR IMAGINEERING*



THERE IS deep significance in the fact that the price trend of Alcoa Aluminum is in reverse.

As a cold fact, it means that much Imagineering has been at work, driving so hard at costs and processes that in the face of all conditions, the price of ingot aluminum could be reduced from 20c to 15c a pound.

As an achievement, it saves the Government, our only customer now, many millions of dollars a year.

As a tool for the future, that price trend has amazing possibilities. The things peacetime America will want to do will have to be done cheaply. The things peacetime America will have to sell—in order to provide jobs for

all—will have to be made cheaply. Here is a price trend that cuts through the whole structure of materials.

What an opportunity for Imagineering, for letting your imagination soar and then engineering it down to earth. We coined the word to describe what industry can be doing about the future.

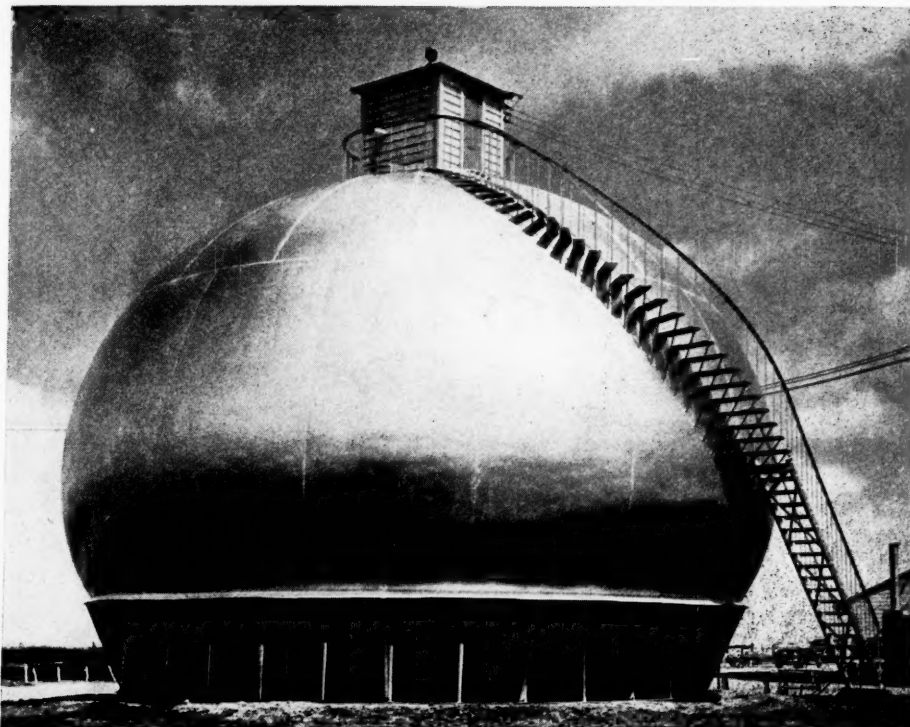
We have driven the price of Alcoa Aluminum down to provide one grand material to work with.

And we are prepared to work with you, however you may suggest.

ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA ALUMINUM





HORTONSPHEROID helps to "KEEP 'EM FLYING"

This 7,500-bbl. Hortonspheroid helps to "Keep 'em Flying" by providing water storage under pressure to guard against the failure of the transmission main supplying the flying field where a U. S. bomber squadron makes its headquarters.

Hortonspheroids are generally used for storing volatile oil products under pressure. This is the second one used for the storage of water, and the first to operate under pressure. Furthermore, the manner in which the installation is piped, to produce a certain result, is intriguing.

The spheroid is located at the end of a 5-mile transmission line. Normally water flows from the transmission line at 45 lbs. per sq. in. pressure, through the spheroid, and into the distribution mains at the air field. If, however, the pressure in the transmission line drops below 45 lbs., automatic booster pumps

cut in and step up the pressure to 45 lbs. To make the supply in the spheroid available in case of transmission main failure, or to step up the pressure in the distribution mains in case of fire, there is another booster pump on the outlet.

Ordinarily when a reservoir is located at the end of a transmission main, the main empties into the reservoir and the entire supply has to be repumped. The novel feature of this installation is that the pressure in the transmission main is used during normal operations to deliver water in the distribution system. With this set-up the camp has the advantage of a reserve in storage, without dissipating the residual pressure in the transmission main.

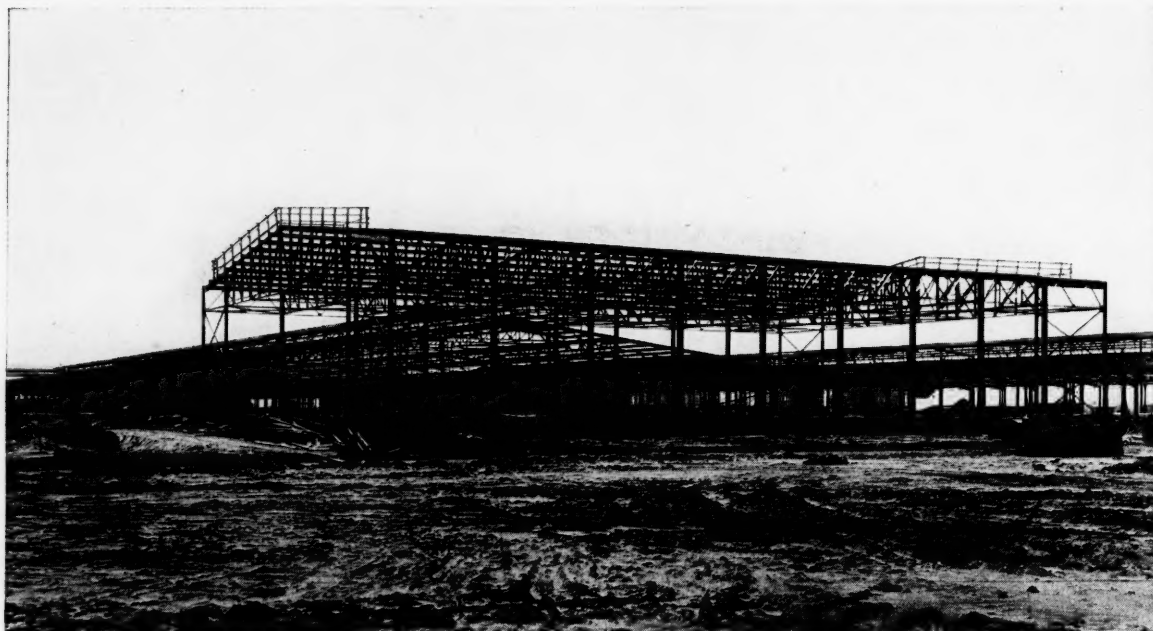
Other standard Horton tanks are also being adapted to military production. Hortonspheres are used for ammonia, cylindrical tanks for liquids and gases and flat-bottom tanks for chemicals.

CHICAGO BRIDGE & IRON COMPANY

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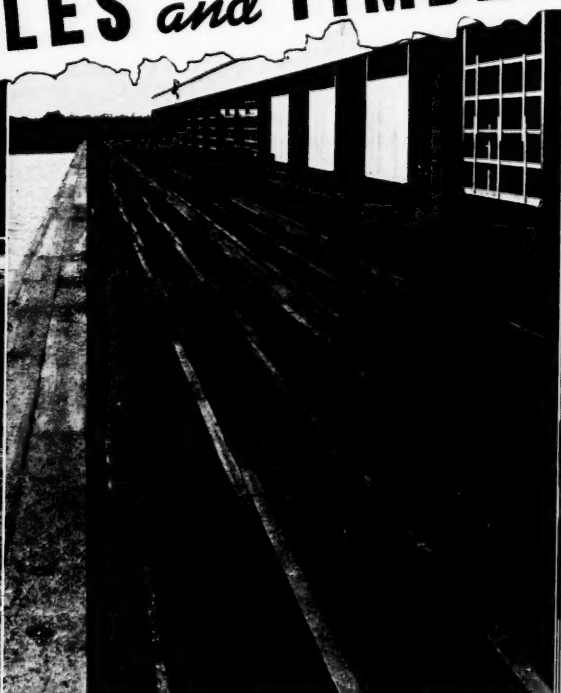
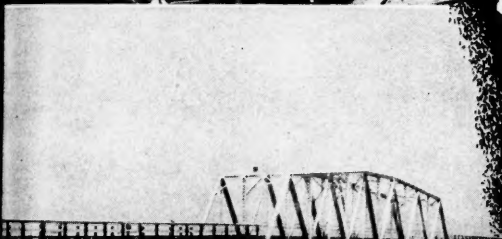
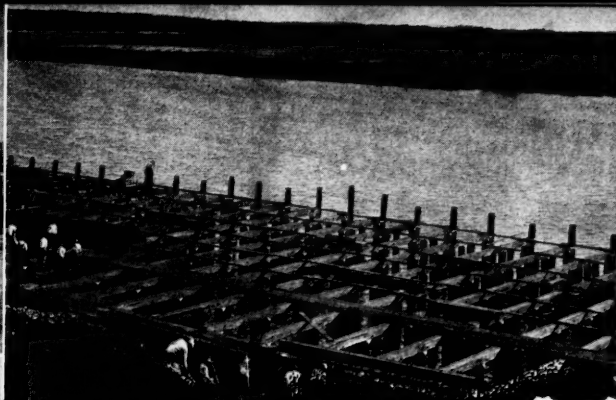


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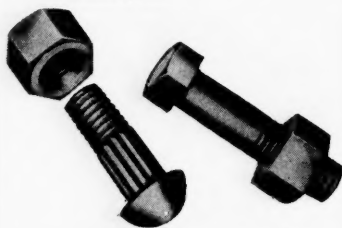
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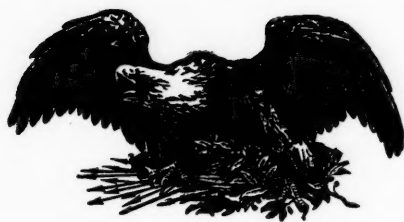
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UNITY of PURPOSE

GOVERNMENT and PEOPLE

It is interesting to notice the change that is beginning to take place in the minds of our public servants in Washington, elective as well as appointive. The student of economics and political and social science finds this not only interesting but very instructive. To anyone it presents an informing spectacle of the reactions of politicians to the goad of an aroused public opinion. Washington is now coming to the realization that fine sounding social theories have no place in our present national picture, and that dreamers must now become realists—or get out.

It should be noted, however, that this change in attitude is only beginning. Irresponsible political playboys who have basked in the reflected glow of governmental power do not relinquish their pleasant positions and their pet fancies until they are forced to do so, or until their patriotism or their fears become stronger than their love for themselves and their sociological schemes. In witness of this truth we cite the present status of the WPA, NYA, CCC, and the OCD, to mention but a few. These leeches are feeding on our war economy and by their very existence are sapping strength, in manpower, time, and money, from the job that must be done.

Avowed New Dealism is no longer the only open sesame to a fat political treasure cave. The people of the United States, in all walks of life, are determined to win this war no matter what the cost may be to themselves, and their temper is such that they will discard or destroy anybody and anything that stands in the road to ultimate victory.

The President of the United States recognizes the

seething flux of a people bubbling over with energy that wants to be, and must be, converted into fighting power. Mr. Roosevelt is no longer the great humanitarian. He is the commander-in-chief of our armed forces. He is shedding his civilian garb, with its voluminous coat tails that were so ideal for breeding and feeding political moths, and is replacing it with a service uniform. There are no coat tails to an army blouse or a navy jacket, and the parasites of the body politic sense the change.

The people of this country realize that we are at war. They realize that thus far we, and our allies, are being badly beaten. They want intelligent and inspiring leadership, and they look to Washington for it. They will get it; for, under our form of government, the people eventually get what they want.

This truth is now beginning to seep into the minds of even the political time-servers in Washington.

Recognizing at last the seriousness of the situation which they face, hosts of governmental bureaus, commissions, corporations and boards are futilely seeking sanctuary by trying to prove that they are necessities in the war effort. Their pleas are so palpably selfish and untrue as to be ridiculous in normal times; today they are tragic.

We, the people, are proud to toil and sweat, to fight and die for the preservation of American ideals. We are willing and anxious to make any necessary sacrifices. But we demand that our government cut out the cankers that infest our political body and make our nation united and strong to face the enemy.



ASSEMBLY-LINE SHIP PRODUCTION

PLANT conversion and assembly line methods are making a sleek, one-funnel job, 441 feet long and 57 feet wide of the Ugly Ducklings or Liberty Ships now being built at top speed in a race to put more freighters to sea than the enemy can sink.

In contrast to their Hog Island progenitors of World War I vintage which were produced too late for real service, Ugly Ducklings are pouring out of inland and coastal plants in pre-fabricated sub-assemblies at the rate of one a day. Before the year is out, two a day will be splashing from the ways.

To make an Ugly Duckling, dump 3200 tons of steel plates, girders, bars, angles and channels at one end of a prefabricating plant. Haul the stuff by overhead cranes down a production line to

be cut, bored, punched, sized, shaped and welded. Then load each resulting sub-assembly on a freight train at the other end of the plant and send it down to the sea, each to be welded or riveted into place in a building ship.

But first get a factory that can do this. Hog Island and its kindred shipyards had to be built before an hour's work began on ships in the last war. The shortest span between breaking ground for a shipyard and launching a vessel was 16 months.

But now, by converting inland and coastal factories—such as the

Above—The midship section of an Ugly Duckling nearing completion in a large Atlantic shipyard. In the background is a scene typical of many large American shipyards as thousands of builders work to make Uncle Sam master of the seas.

[OEM photo by Palmer]

one described here — only 11 months elapse between awarding of the contract and christening a Duckling.

Because it is near the coast and a likely target for bombers and saboteurs, the name and site of this factory may not be mentioned; but, before it was abandoned to a maintenance crew 10 years ago, it turned out freight cars. Leased in March of 1941, the plant was converted quickly and began work before June. With a nearby shipyard to assemble its bits and pieces, it turned out its first ship before Christmas—a record. Now it is making one a week, and before long will hatch one every 3½ days.

When ship builders took over this plant last April, they cleaned house and moved machinery around to function like a streamlined auto plant. There was room to do it. The draughty, gloomy barn is 270 feet wide, and 1,620 long—the largest cargo ship shop in America.

By putting in new dies and cutting edges for tools already in the plant, almost all the machinery

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that had made freight cars was converted to the making of freighters. A 30 per cent increase in installations was needed, but most of them were second hand.

One of the largest additions to the plant was designed in Germany. It is a plate roller so big it looks like four coast defense guns employed as a wringer.

Built in Chicago in 1919-1920, at a cost of \$180,000 it was used by U. S. Steel until 1937, then went to a used-machinery dealer who found no buyer until the freight car shop was converted. Then it sold for \$45,000—a bargain. It would take a year to replace the great machine.

This roller, busy night and day, shapes 420 plates a week for the sides of ships. It is temperamental. It needs care and nursing. Without proper direction, the plates it bends would fit a ship as loosely as the petals of an artichoke.

The largest installations for the converted plant were the furnaces, where heavier work, such as the ribs of the ship, the bilge, stem, stern, and thick keel plates, are softened up for shaping in 3,000 degrees Fahrenheit. Hauled out on a perforated steel floor, the red hot steel is shaped by crews operating hydraulic pushers and rams. These bend and shape the metal against steel molds or a pattern of metal pegs driven into the floor.

Each of a ship's 400 side plates has a shape and size of its own.

The plates, dangling from overhead cranes, sail down the production line of the once gloomy shop. Safety crews escort them to the ringing of warning bells, so that no workman gets clipped on the head. At all times, at least 50 tons of steel—parts of 22 ships are swinging through the factory.

Each plate stops at the machines that will process it. If it requires rivets, it goes through presses that punch holes as though through cheese. If it is too large, it is cut to pattern by machine shears,

planers and hand torches. Once processed, the plate swings out the other end of the plant through hanger-like doors for welding into sub-assemblies — 22-ton double-bottom sections, for example, 22 by 29 feet and 4 feet thick. Two such sections span the breadth of a standardized boat.

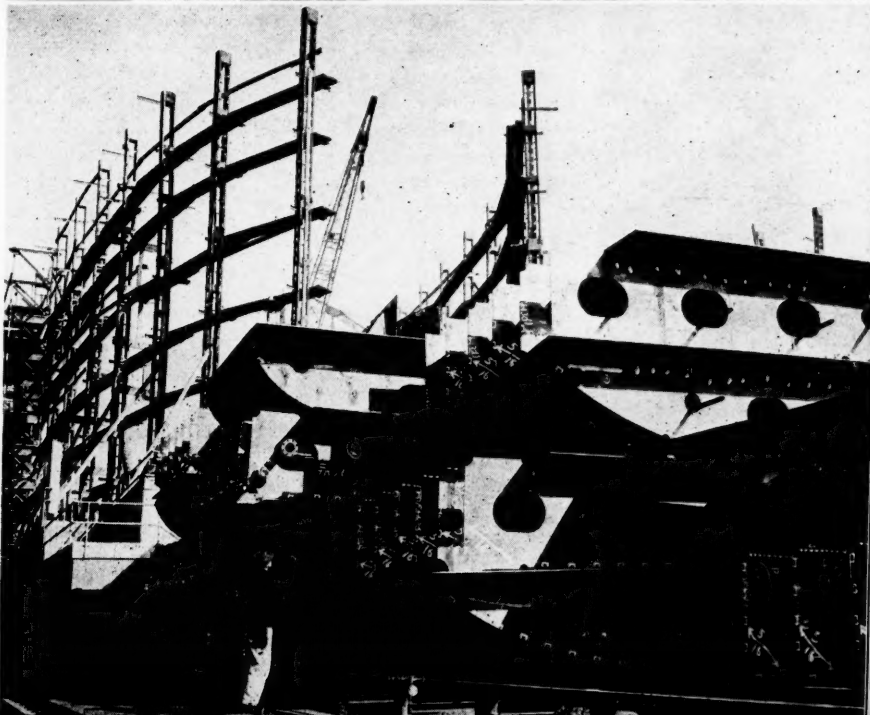
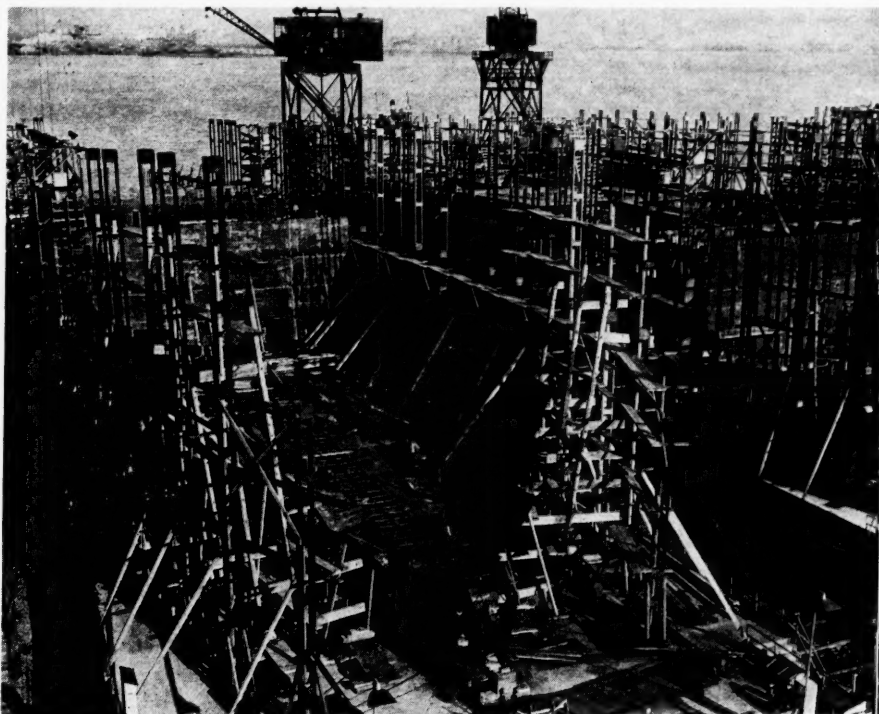
Flatcars tote the sub-assemblies, 30 cars at a time—to the shipyard, where they are hoisted up, over and fastened in place. Most are pasted together by welders, some pinned

together by riveters. Respective sub-assemblies are interchangeable in this day of mass production. Parts of one ship fit another like parts of automobiles.

It takes 2,550 tons of girders and plates, 55,000 rivets and 194,000 linear feet of welding to put an Ugly Duckling into floating condition. Once off the ways, it then gets its engine and deck fittings.

Welding, which saves time, steel, and weight, makes a Duckling

(Continued on page 54)



A new vessel having just been launched the keel is assembled for yet another. Above can be seen the bottom and side shell plating and the inner tank sections as they are welded into place. Below is the midship section prefabricated and ready for installation. All parts are prefabricated and completed sections carried six miles to the ship ways.

[OEM photos by Palmer]

EXPANSION of ALUMINUM and MAGNESIUM PRODUCTION

VAST expansion of the nation's aluminum and magnesium production facilities as recently announced, is a matter of considerable interest to the South where much of this production is now centered. The program is designed to assure enough of these essential materials for the production of 60,000 airplanes this year and 125,000 next.

Aluminum facilities in the United States now in operation plus those under way and due to start production soon call for reaching a top rate of 1,450,000,000

pounds of annual capacity. This will be increased to 2,100,000,000 pounds a year, which, with Canadian imports, is scheduled to give the nation a top rate of something over 2,500,000,000 pounds of aluminum when the whole program is completed.

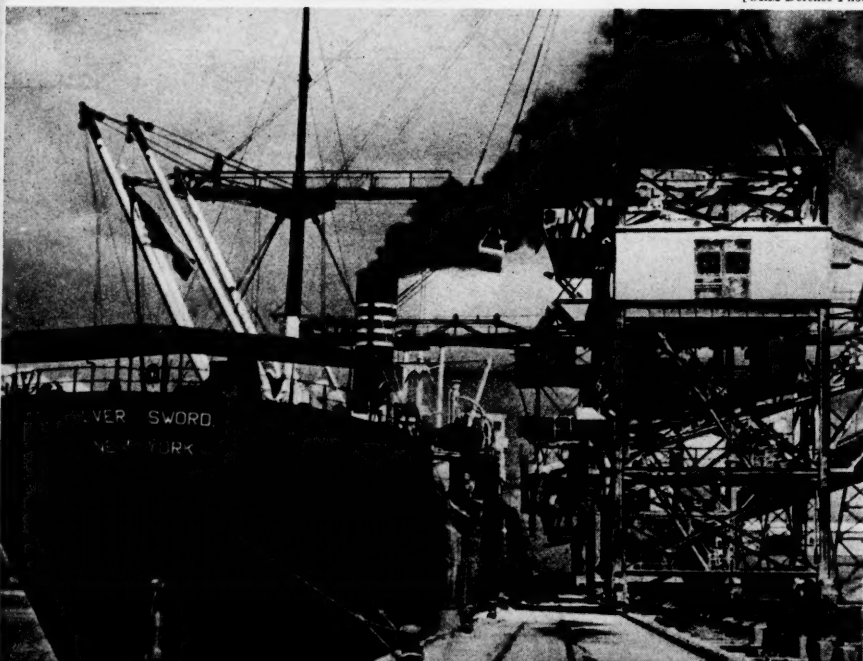
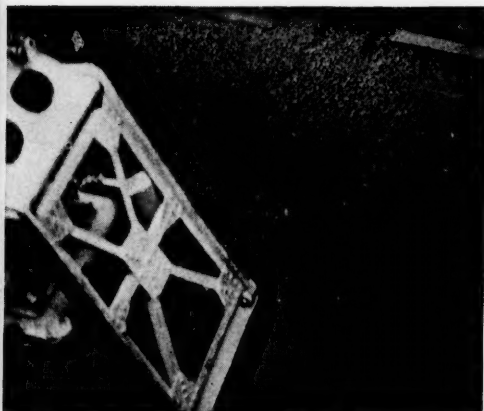
The United States produced 615 million pounds of primary aluminum in 1941, exclusive of imports. In 1942, present estimates call for a similar production in excess of one billion pounds.

Magnesium capacity, now scheduled to reach 400 million pounds a year through plants either in operation or under construction will be increased to 725 million pounds annually.

The aluminum program may be broken down into four parts: Present facilities totaling 850 million pounds; those now under way,

In addition to the entire domestic supply produced in the South, much bauxite is brought to this country in a fleet of fifty ships from South America. Upon arrival here, the ore is unloaded from the holds by clamshell bucket and conveyors as shown in these two views.

[OEM Defense Photo]



known as the first expansion program, adopted early last year, totaling 640 million pounds; contracts with the Aluminum Company of Canada for imports reaching a total of 450 million pounds a year in 1943; and the present expansion program adopted by the War Production Board for an additional 640 million pounds.

Construction is starting for all the first 640 million-pound expansion, and surveys for power requirements and possible locations already have been made and contracts let for much of the new program.

In addition to providing this vast amount of primary metal, fabricating facilities must be provided to turn it into useful products. These facilities must also be able to handle the substantial quantities of useful scrap which can be recovered in the fabricating process. This is conservatively estimated at 15 per cent of primary production.

This means that more than 400 million pounds of recovered scrap, on the basis of the entire program, must be remelted and reworked, requiring facilities for this phase alone of more than the total which were used in 1939 on primary and scrap.

In general, the cost of providing fabricating facilities for a given amount of aluminum is about twice that of facilities for production from mining the ore clear through to the finished ingot. The time lag for constructing fabricating machinery is equally important. Fabrication of high strength aluminum alloy requires heavy and costly machinery.

As an example, crank cases for the new big aircraft engines must be forged with 35,000-pound hammers; in contrast, the automobile industry generally uses hammers of 16,000 pounds.

Aluminum sheet must be rolled on very heavy rolling machinery, so that new mills, with extensive heat-treating equipment, must be provided. A mill to roll 20 million pounds of aluminum sheet a month costs more than \$50,000,000. Twice that capacity is necessary for the new aluminum program.

Increasing aluminum capacity by 640 million pounds a year is about equal to building two alumi-

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num industries of the size that existed in the United States in 1939.

For the second expansion alone it is necessary to mine an additional million and a half tons of bauxite; to convert this into 1,300,000,000 pounds of alumina; to erect new plants for the manufacture of carbon electrodes; to supply all the electrolytic plants; to provide facilities for converting about half the aluminum produced into sheet metal; to construct extrusion plants, casting facilities, forging plants and to construct plants for the production of synthetic cryolite and aluminum fluoride.

This construction will require some 250,000 tons of steel; about one million kilowatts of electricity constantly available for operation; will use 200,000 tons of petroleum coke a year, 100,000 tons of soda ash, 60,000 tons of sulphuric acid, 420,000 tons of filter cloth and a great variety of other products.

One of these 640,000,000-pound programs costs about \$350,000,000. The United States has practically completed one of them, and the other is now underway to reach the new goal.

The total output now underway will be far beyond the reach of anything the Axis powers together with all the occupied countries can even contemplate. No computation of anything the enemy nations can do in aluminum even approaches it.

Magnesium

New scientific discoveries and better sources for raw materials have aided materially in pushing forward the magnesium program. In 1941, we produced 33 million pounds; our objective is to reach 725 million pounds a year.

The 400 million-pound program now under construction, of which 54 million pounds has been completed, consists of 352 million pounds made by the electrolysis of magnesium chloride and 48 million by the Hansgirk carbo-thermal process. The latter is relatively new insofar as large-scale commercial operation is concerned.

As the requirements of electricity for producing magnesium by electrolysis are extremely heavy, a constant search has been carried on for a process that would reduce power demands.

Processing aluminum ore at a Gulf Coast plant. Top—Impurities remaining in the ore after earlier processing stages are removed in these large filter presses. Top center—In this, the world's largest aluminum plant, metallic aluminum in a molten state is tapped from electric furnaces into ladles. It is then cast in pigs which must later be remelted to remove impurities before fabricating. Lower center—Rolling aluminum ingots for sheet metal at the Aluminum Company of America's Alcoa, Tenn., plant. Bottom—Finished aluminum sheets for America's fighting aircraft are prepared for shipment and rushed to plants all over the nation.

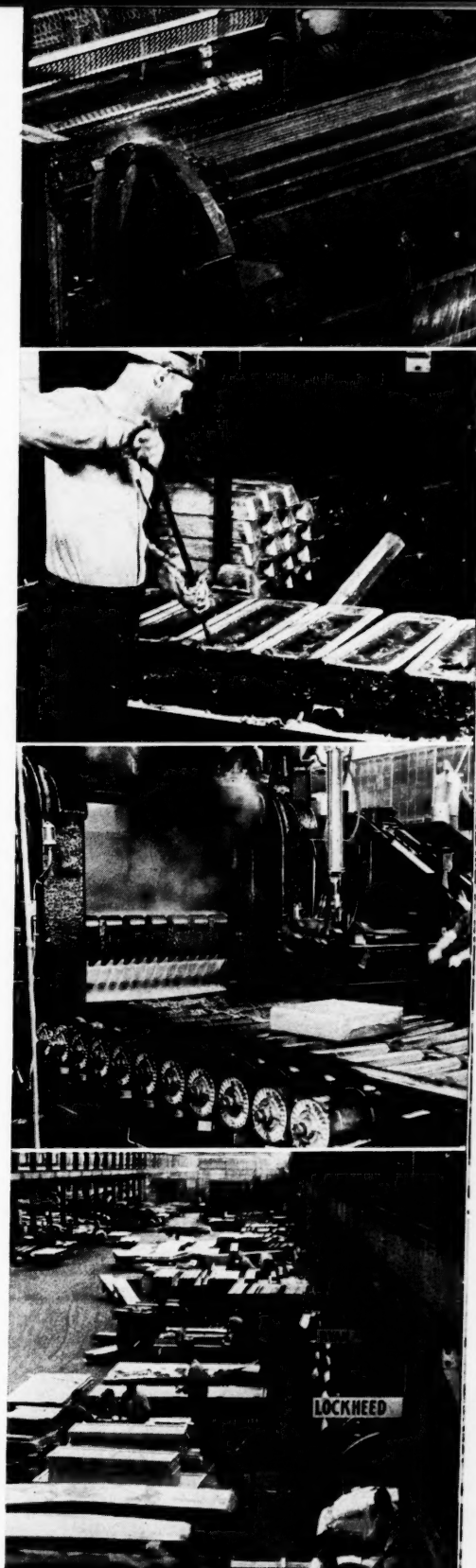
A committee of the National Academy of Sciences has recommended either of two ferro-silicon processes developed independently.

Contracts now have been entered into between the Defense Plant Corporation and six American companies for the design and construction of magnesium plants using ferro-silicon processes. Their aggregate capacity is 157 million pounds of metal a year. All but one of them will use gas heat rather than electricity as a source of power. These plants can be completed much more rapidly than electrolytic plants and will be less expensive to construct. While cost of operation will be higher, they are expected to provide a high quality magnesium in the shortest possible time. An additional 24 million pounds probably will be produced by the ferro-silicon process, perhaps a part of it by still another new variation of the process now being examined by the National Academy Committee.

The discovery of rich and extensive magnesium brine deposits in Michigan has brought out magnesium chloride about three times as rich as the best in use heretofore.

This source will be used for material to produce an additional 144 million pounds of magnesium annually by electrolysis. Contracts for 36 million pounds of this amount have been let and negotiations for the remainder are expected to be completed shortly.

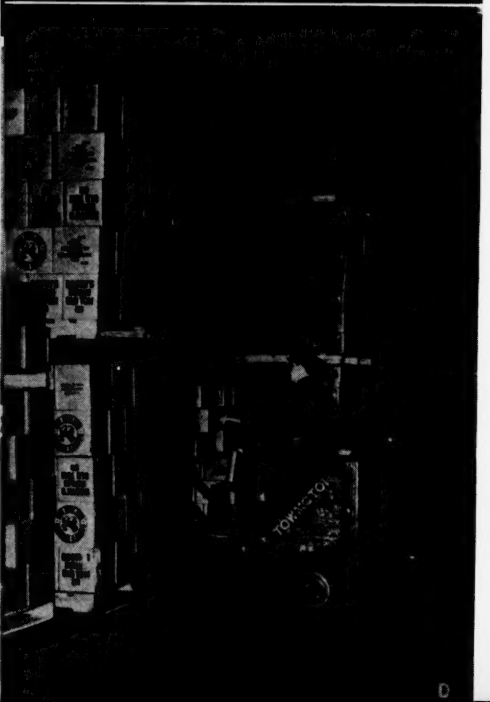
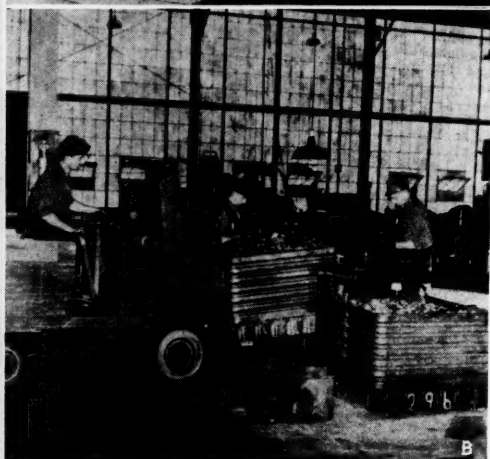
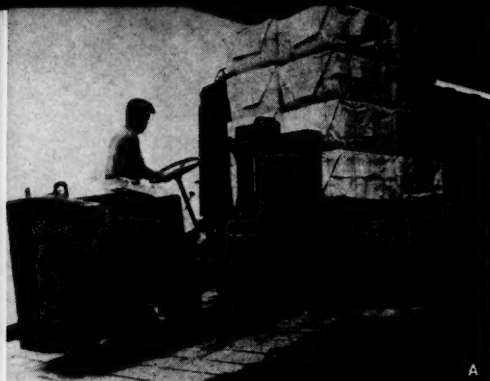
This contemplated production of 725 million pounds of magnesium a year is believed to exceed anything the Axis powers can hope to produce and will provide all the magnesium needed for the production of aluminum alloy for the en-



[OEM Defense Photos]

tire aircraft program and a tremendous quantity of incendiary bombs.

AN INDUSTRIAL "JEEP"



IT is one of the biggest bug-a-boos of business. Practical production men call it *non-productive cost*—the often-hidden cost that adds to price but not to value—the cost of getting materials where you want them when you want them—the cost of materials handling.

During the last decade increasing attention has been paid to these costs. Efficient management, production and marketing, alone could not meet the challenge of spotty demand and rising overhead. Cost schedules had to give somewhere; alert management discovered that the most logical untapped source of further cost adjustment lay in materials handling operations—unloading of raw materials, moving them into storage, distributing them to fabricating stations, spotting processed work to keep the production line flowing, moving finished goods into warehouses, and loading finished goods for further distribution.

Thus, under the broad term "materials handling" there is a wide range of operations, the very type of a "jungle" in which it is difficult to control costs, or for that matter to check upon them. The very diversity of these operations, however, has made possible a concerted attack upon non-productive costs, for it has led to the develop-

ment of specialized equipment for materials handling operations. Foremost among such equipment is the industrial lift truck, a unit that lends itself to a great variety of operations.

In today's terminology, perhaps the best description of an industrial lift truck is that it is a factory "jeep," ready to move to any part of a plant for a quick mop-up of conditions which might cause a stoppage in the flow of materials.

Installation records from dozens of different industries give proof that non-productive costs are giving ground before the mechanized force of industrial lift truck. Available material from installations in four widely different fields makes it possible to present the following "communique" from the scenes of action.

Moving Multi-piece Loads as Units

The forked arrangement on the front of lift trucks makes it possible to get under a stack of materials, grouped as a unit on a platform of pallets, and to move the entire stack as one unit. For example, in figure A, 16 bales of wood pulp are carried as a unit on a skid load. This ability is utilized in another manner by a manufacturer of small automotive parts where a metal skid box 40" x 44" x 21½" is filled with parts, then easily and quickly moved by the lift truck; the total load represented by the filled metal container is 3700 lbs. Still another demonstration of this big-load feature is seen in the loading and unloading operations of an eastern manufacturer, where 12 to 13 coils of heavy steel wire are picked up and transported as one load. A still more dramatic advantage is made by a glass bottle manufacturer who stacks 80 cartons, weighing 1300 lbs., on a wood pallet which is then picked up by a lift truck for storing or loading.

On this evidence—just a small

Top to bottom—(Fig. A) An industrial lift truck hauls 16 bales of wood pulp, each weighing 400 lbs., from warehouse to boxcar, the time required being three minutes for the 150-ft. round trip. (Fig. B) A metal skid box of small automotive parts is picked up and moved 60 ft., from inspection to storage in 28 seconds. (Fig. C) \$7.89 per carload is saved in unloading 40-ton carloads of steel wire by a manufacturer employing this industrial truck. (Fig. D) 80-carton loads of glass bottles, weighing 1300 lbs., are carried 285 ft. to warehouse and stacked 70 ins. high in a total time of 2 minutes 23 seconds. (Photos by courtesy of Towmotor Co., Cleveland, O.)

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part of that which is available, it is apparent that the lift truck is designed to move bigger loads by moving grouped materials as a unit.

Faster Movement Increases Tonnage Handled

The industrial lift truck's adaptability to the job of keeping materials flowing smoothly and swiftly from carriers through processing into storage and through further distribution is likewise partially due to speed of movement. Capacity load speeds as high as 10 miles per hour are mighty fast in a factory—some five times that achieved by man-powered hand trucks. But for actual evidence of achievement, let's see what installation records reveal. Referring again to figure A, an accurate time check shows that 6400-lb unit loads are picked up at the warehouse, carried 75 feet—part of which is up a ramp with a 15% slope, unloaded, and the lift truck is back at the warehouse for another load in a total time of three minutes!

The automotive parts are handled with comparable speed—a metal containerful of inspected parts being picked up, carried 60 feet to storage space and spotted there in only 28 seconds.

Timing at the plant where coiled steel wire constitutes the materials handling problem reveals that 12 to 13 coils are picked up as a unit load, carried 550 feet to scales, weighed, carried an additional 50 to 100 feet and set in place in the storage yard in a total of 3 minutes and 24 seconds.

Where 80 cartons of glass bottles are moved as a unit load, 1300-lb loads are picked up in the packing room, carried 285 feet to the warehouse, lifted 70" and placed on the stack in 2 minutes and 23 seconds.

The cross section of "speed records" established under day in and day out conditions verifies that industrial lift trucks are enabling manufacturers everywhere to reduce time lag in materials handling to a minimum.

Stacking Makes More Space Available

"Stack-ability" of the industrial lift truck is another feature which

Top to bottom — (Fig. E) Warehouse capacity at a waterfront terminal is increased by this industrial truck stacking loads as high as 25 ft. (Fig. F) 1500-lb. bundles of steel tubing are stacked by a lift truck to clear floor space. (Fig. G) 4500-lb. bundles of strip steel are piled four high by one man operating a lift truck. (Fig. H) By stacking 80-carton pallet loads 23 feet high, a lift truck makes it possible to utilize "air space" in this warehouse. (Photos by courtesy of Towmotor Co., Cleveland, O.)

aids in attacking the problems concerned with materials handling. In loading and unloading carriers, in spotting materials to keep machines humming, in stacking loads high to utilize "air space" in warehouses, in numerous odd jobs, materials handling is enormously simplified because the lift truck can raise full rated loads as fast as 40 feet per minute to an over-all height of 25 feet.

For example, at the Jacksonville Municipal Terminal, Florida, wood pulp is stacked high in warehouses to increase storage capacity. This is a vastly different stacking operation than that where 15' bundles of steel tubing are stacked in a steel producing plant to save floor space; or of that where 4,500-lb. coils of strip steel are stacked four-high to make full utilization of floor space. Still another demonstration of advantages of stacking to increase storage space is seen in figure H, showing pallet loads of glass bottles in cartons being stacked to a height of 23 feet.

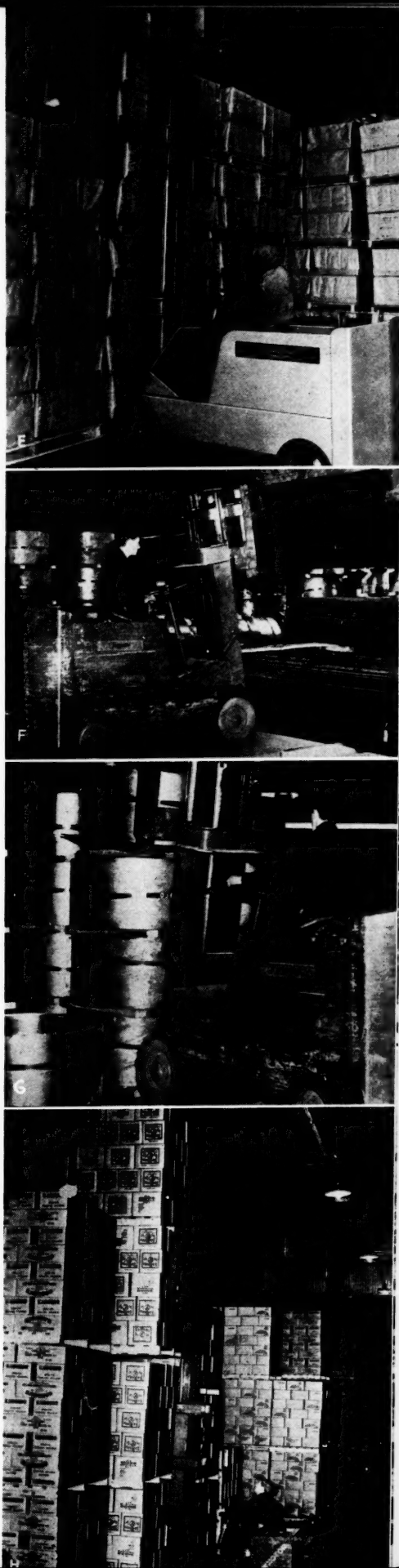
Here's How It All Adds Up

Bigger unit loads, moved more swiftly and readily stacked to required heights adds up to one important fact: Loading and unloading of materials is made more efficient. Thus, on the net result side in the few installations cited, we find these credits:

Wood Pulp: 500 to 750 tons per 8- to 10-hour day being handled by lift truck, where operations consist of moving bales from warehouse 500 feet to ship side.

One man and a lift truck loading bales from warehouse to freight car handles 150 to 175 tons per 8-hour day, loading four to five cars.

(Continued on page 54)





WORLD'S LONGEST UNDERWATER NATURAL GAS PIPELINE COMPLETED

UNITED Gas Pipe Line Co. has finished its 204-mile natural gas pipeline from the Lirette gas field in lower Louisiana to Mobile, on the coast of Alabama, a route which involved building the world's longest stretch of underwater pipe and a number of river crossings, including a triple line under the Mississippi River.

Constructed to supply the increasing demands for natural gas fuel by industries along the Gulf Coast from the Mississippi river eastward to Mobile and Pensacola, Fla., the pipeline was blown and tested at its Mobile terminus during the second weekend in February.

The new line supplements natural gas now being delivered in the Mobile-Pensacola area by the existing Jackson-Mobile line. It has been estimated that more than

70 per cent of the total capacity of the new line will be used by industries engaged in filling national defense contracts. It assures that area of continued dependable natural gas service by means of the two-way supply.

Embodied in construction of this line for purposes of economy and speed of construction were some of the most difficult pipelining feats ever accomplished, including the world's longest underwater pipeline, the longest single "shove" ever made, miles upon miles of construction through swampland, numerous river

Above—The task of welding the pipe was often made particularly difficult when wind churned up the water of Lake Pontchartrain. Below—Welding being carried on at night 12 miles out in the lake.



*project part
of 204-mile
line from
Louisiana
gas fields
to Mobile*

crossings, including a threeline crossing of the Mississippi river. Construction was started early in July, but considerable delay was occasioned by shortage of materials and frequent periods of bad weather.

First notable feat performed on the line was on the Mississippi river 12 miles above New Orleans where a triple-submarine crossing was laid in seven days. The river is 2800 feet wide at this point and approximately 90 to 120 feet deep with a very swift current.

The greatest part of the job came when the line was laid across Lake Pontchartrain, 25.59 miles wide at this point. Serious consideration had been given to a land route, skirting the western and northern shores of the lake. Twenty-five miles across the lake, as opposed to the 37 miles by land which would have been mostly swamp construction, won out. The lake crossing presented not only the problems of the proper use of marine equipment and a gamble with one of the country's most temperamental bodies of water,

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Top—The right-of-way through the Pascagoula swamp near Mobile. The ditch at this point soon turned to a river of mud. **Top center**—Through dense forest, and undergrowth and swampy terrain, workmen muck out the ditch between the Airline Highway and Lake Pontchartrain. **Lower center**—A scene along the Godchaux Canal, where it was necessary to work from a ramp because of the swampy nature of the route. **Bottom**—A crew holding a section of pipe in place as it was lined up for welding. After it was welded it was slipped down onto the Mississippi River bed 160 feet below.

but represented a considerable saving in steel pipe.

Such problems recall similar difficulties encountered in the Lake Pontchartrain area in the early 70's by an engineer named Joseph J. French. Some correspondence in the files of the *Manufacturers Record* refers to a gas holder installation at Milneburg, five miles from New Orleans, in which it is stated that:

"Milneburg has very extensive wharves, restaurants and bath houses being built upon piles out in the lake. All the houses are restaurants, some of them large and well kept. It is to light up these places that gas is being introduced."

"This is a terrible job, for the surface of the lake is level with the surrounding ground and we have to bale out the water as we dig. Furthermore, every inch of the way has to be cut with an axe in consequence of the cypress stumps which never decay under the ground. But we have the hole cut out at last and should have put the tank in were it not for the very cold and disagreeable rain which prevails."

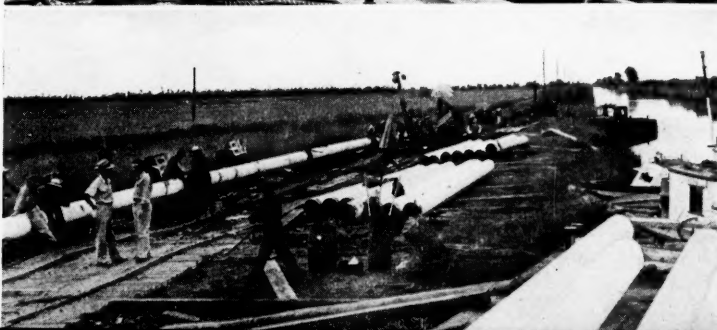
The line size of 16 inches up to the lake was decreased to 14 inches at the point of entrance on the southern shore and pipe with one-half inch wall and an outer protective coating almost an inch thick was used for the lake crossing.

Pipe was welded into lengths of approximately 2,500 feet on shore and towed out into the lake by tugboats. Line was laid from the center of the lake into shore by means of two huge derrick barges and a welding barge. As each tow came up, one end was lifted aboard the welding barge and welded to the pipe already laid in the lake. The equipment was then moved down to the lower end of this section where the next tow was welded up. This process was repeated until the lake crossing had been accomplished. It took only 45 days to do this job, unique in the annals of pipelining, in spite of three storms of hurricane force during which it was necessary to move all equipment from the lake.

The remainder of the line was laid from Mandeville to Gulfport and then to Mobile through the swamps and rivers of the Gulf Coast. Completion of this line forms another link in United Gas Pipe Line company's interconnected system of more than 6,000 miles of main transmission lines.

General contractor for the project was Brown & Root, Inc., of Houston, Texas. Parts of the main line laying work were subcontracted to the Latex Construction

(Continued on page 54)





YEAR ROUND PASTURING

WITH all human resources being marshalled against the waves of barbarism that threaten the Western Hemisphere, maximum production of essential commodities is the watchword for the farmer as well as for industry.

Our war effort has only begun. Hundreds of thousands—probably millions—more men will be added to our army, navy, air services, and defense industries. Many of these will come from the farm. Despite this fact, the Southern farmer must not only produce more than ever before, but adapt himself to changing conditions and the newer forms of agriculture which have been found best suited to Southern soils and climate.

It is widely recognized, today, that one of the most promising of farm industries is beef cattle raising and dairying. The mild winter climate of the Southern states gives us the great opportunity for year-round grazing. We have millions of acres of idle cotton and tobacco lands that can be converted to pasture. We can also utilize a part of our vast corn areas, and large sections of idle lands not adapted to other types of farming.

At "Invershiel" — the 700-acre dairy farm of Hugh MacRae, Wil-

By

Eugene Wright

ilmington, North Carolina — these and other conditions that typify much of the Coastal Area have been turned to advantage in recent years by the use of annual forage crops and now constitute actual examples of how a profitable beef and dairy industry can be brought about. These annual crops have not only enabled Mr. MacRae to keep his cows at pasture the year round; they have helped to revitalize the soil and have, within the past several years, enabled him to completely eliminate corn, letting it disappear from his feeding program along with so-called "permanent pastures."

During the winter months, when thousands of livestock producers throughout the South persist in the traditional custom of supplementing ensilage with "bought feeds,"

Cattle grazing on Sudan Grass at the 700-acre dairy farm of Hugh MacRae at Wilmington, N. C. Sudan Grass can be "grazed-down" every eight days, i.e., it replaces itself for grazing every eight days.

the herds at "Invershiel" graze on green pastures.

"The greatest gain to the South, and one beyond all estimate," Mr. MacRae said recently, "will come by using the six months of open fall, winter and early spring."

Ensilage, of course, still is made up at "Invershiel" as an emergency ration for drouth periods. But it is not made with corn, which, Mr. MacRae believes, has not only devitalized our soil, but has been responsible for a huge erosion loss from our fertile lands.

"Had farmers, located in suitable regions, stuck to barley, oats, and other small grains which can be raised in the winter months," he says, "we would have protected our fertile lands from erosion. We would have had our summers for the growing of crops which would build up and maintain soil fertility."

Although the ensilage reserve at "Invershiel" was formerly made up from varieties of corn, which give tonnage per acre, it is now prepared from Sudan grass, Johnson grass and/or soy beans, to which molasses is added to insure the necessary fermentation.

For over twenty years Mr. MacRae experimented with more than

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eighty varieties of grasses and legumes—changed from season to season and from year to year—and finally abandoned. Pastures were improved with vetch and clovers, and with better varieties of grasses. They were limed and fertilized. The dairy herd was moved every few days during the grazing season from one pasture to another. But except over short periods, the milk production was satisfactory only with supplemental feeding.

To establish a good pasture, Mr. MacRae concluded, was slow and difficult, while to maintain a high standard was often a losing fight against weeds and harmful grasses but his determination to succeed remained steadfast.

"Visits followed," he said, "to different states and foreign countries. In Holland, where grasses were nutritious, it was observed that the cows were fed hay and grain during six months—fall, winter and early spring—and were then put on open pastures for six months without supplemental feeding. He also learned that the intensive farmers of the Castle Hayne community, near Wilmington, had capitalized on the favorable climatic conditions in North Carolina and were improving the European practice by staking the family cows in winter on small areas of Abruzzi rye and, in the summer, on soy beans. They supplemented the grazing with hay made of oats and vetch and fed small amounts of corn meal made from corn grown 'between seasons' on their farms."

Later, in Atlanta, Mr. MacRae met T. G. MacFie, who had lived in South Africa. MacFie had moved to south Georgia and was interested in raising beef cattle.

"Our thoughts ran in similar channels," Mr. MacRae said, "and we exchanged experiences. He told me of a plan used by a progressive farmer in England, in which beef cattle were successfully grazed over extended periods on vetches and hardy winter grains and particularly on giant Essex rape. He loaned me a book which explained the details of this interesting and highly successful program and later obtained a copy for me from London. This book has been kept as a source of valuable information which proved a stimulant at times

when courage to go forward was needed."

If Holland, England, and Castle Hayne could do these things, Mr. MacRae asked himself, why not "Invershiel"? If "Invershiel," why not the entire South?

Through years of preliminary experimenting the ground work had been fairly well prepared. So it was determined to make the effort at Invershiel to graze during the year as many days and months as possible on *annual crops*.

Some of the so-called permanent pastures were plowed up each year and replaced with annual crops. Then it was necessary to become intimately acquainted with the characteristics and merits of each crop and see that it fitted into a practical working plan. For example, the first thought about the Biloxi soy bean was to graze it off after it matures. But then what? The answer, it was discovered, was that the soy bean, in its struggle to perpetuate itself and make seed, will, under favorable conditions, produce abundant foliage five times, extending its active grazing season over a period of three months; longer than that of most nutritious grasses.

Thus, by constant experimentation, a practical "planting plan" was evolved, its objectives being:

1. To allow the cows to do most

of the work by going into the fields and harvesting the crops.

2. To provide an abundance of succulent green feed for the cows during the entire year.

3. To make profitable use of the farm acreage in winter and summer, thus expanding the productive value of the land.

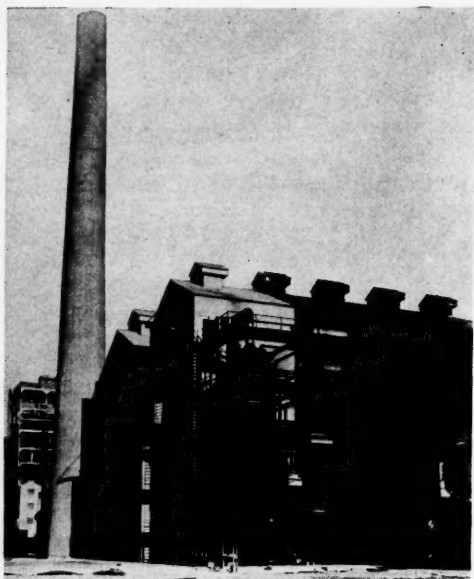
4. To get the maximum benefit from the soil-building qualities of legumes.

(Continued on page 59)



Proof that year-round pasturing is a real possibility in the South can be seen in these scenes of grazing crops in North Carolina. Right—A field planned to carry one cow on one acre for one year. Below—Proof positive that one acre is sufficient.





Sodium bicarbonate is converted to soda ash in rotary furnaces in this building at the Lake Charles, Louisiana plant.

THE Mathieson Alkali Works, Inc., producer of industrial chemicals, is observing its 50th Anniversary this year. The story of its founding as a Virginia corporation in 1892, and of the expansion of its two great plants at Saltville, Virginia, and at Lake Charles, Louisiana, is the story of the South's vast natural resources turned to man's account.

Salt, limestone, coal, boundless dead oyster beds, dolomite, petroleum, natural gas, sulphur—these are the riches of the earth that, by the magic of chemistry, are trans-

***Mathieson Alkali
Celebrates
Fifty Years of
Converting
South's Minerals***

50 YEARS of PIONEERING

formed into alkalis, chlorine, ammonia, metallic magnesium, and other products so essential to Southern industry and our war production.

From an historical view point, Mathieson's fifty years of active existence may seem relatively brief in comparison to that of the American chemical industry as a whole. Yet in its own fields, Mathieson is one of America's pioneers.

Half a century ago all of the bleaching powder and most of the alkali consumed in this country were still being imported from England, and the prejudice in favor of the imported products was strong. Hence, the launching of domestic production was a pioneer venture, both as to manufacture and as to marketing.

It is not surprising, under these circumstances, that the construction and initial operation of the new company's plant was entrusted to a retired English alkali manufacturer, Neil Mathieson. He sent his son, Thomas T. Mathieson here in January 1893, and, under the latter's supervision, the plant at Saltville was constructed.

Saltville was selected as the site for very special reasons. There, in the Holston valley, are located huge deposits of common salt, the chief raw material of the ammonia-soda process by which Mathieson proposed to manufacture alkali. These salt deposits are historic, having been used by the Indians before white settlers came to the valley. During the Civil War, the deposits were the sole salt supply of the Confederacy and many a battle was fought for possession of the valley and its surrounding

hills. The Mathieson property is rich also in high-grade limestone, another important raw material of the ammonia-soda process. And over the ridge of the hills are coal mines to supply the plant with fuel.

The production of alkali at Saltville began on July 4, 1895. Since that time, the plant has operated continuously, although frequent expansion and modernization have left little trace of the early operations there.

About that time, Mathieson obtained control, in this country, of the Castner electrolytic cell for the manufacture of caustic soda and chlorine. A small unit was first installed at Saltville, and it showed the feasibility of the process, but also demonstrated the necessity for cheap power. A larger unit, utilizing the Castner cell, was erected at Niagara Falls, New York, and there, at the end of 1896, Mathieson began the first commercial production of bleaching powder in the United States, as well as exceptionally pure caustic.

At Saltville, in addition to the standard alkalis—caustic soda, soda ash, and bicarbonate of soda—fused alkalis in briquet form are now manufactured. These include a fused soda ash for metallurgical use, a super-sodium phosphate briquet for mechanical dishwashing operations, a cleanser for use in milk can washers in dairy plants, and an alkali briquet for water treatment and pH control.

The Lake Charles division of the Mathieson Alkali Works had its inception back in 1923 when the management began to explore locations around the Gulf of Mexico to serve the growing industrial re-

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sources of the Southwest. The designing of the plant was started in 1930 and three years later actual construction work was begun. During 1941, its productive facilities were expanded 40 per cent to meet the growing demands for its products.

There were many reasons for selecting the Lake Charles site. Raw materials are economically available. Salt is obtained from the West Hackberry salt dome, from which brine is pumped twelve to fifteen miles to the plant in an almost inexhaustible supply. The lime is obtained from the shells of dead oyster beds, of which billions of tons are available. The shells are dredged, washed, and delivered to the works by barge. Natural gas is piped from the Tepatate Field, forty miles away in central Louisiana.

Lake Charles had no labor shortage and no housing problem to solve. It is located on three of the Southwest's leading railroads, the Southern Pacific, the Missouri Pacific, and the Kansas City Southern. It is on deep water, affording cheap water rates for export, and for shipping on Atlantic and Pacific coasts. Then too, it is on the Inter-Coastal Ship Canal, giving water transport direct to New Orleans and thence up the Mississippi river to 17,000 miles of navigable inland waterways.

A battery of six dry-ice presses and control station at the Saltville, Virginia, plant where the production of alkali first started in 1895, three years after the founding of the corporation.

With Lake Charles as a base, Mathieson has developed a revolutionary method of shipping caustic soda by water to Southern manufacturers. A novel freighter, the twin screw, Diesel-powered "Nickeliner" was designed and built. It contains five nickel-lined holds to carry rayon-quality caustic. The "Nickeliner" also can haul molasses, oil, wheat and other materials in the same hauls so there are few one-way cargoes.

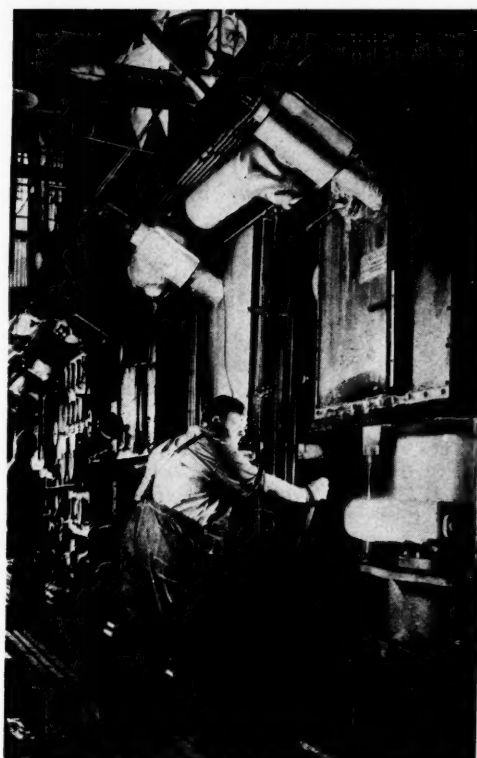
Mathieson also pioneered in the distribution of caustic soda in liquid form in tank cars, and this more economical method of handling caustic soda is being carried on from the Saltville, Niagara Falls, and Lake Charles plants.

Plants for the production of ammonia and for producing dry ice and liquid carbon dioxide are located at Niagara Falls and Saltville respectively. These latter products are obtained from the highly purified carbon dioxide gas which is a by-product of the ammonia-soda process. They are marketed from company-owned warehouses throughout the southern states, finding many uses in industry.

Another Lake Charles product of great importance to the South, is synthetic salt cake. Formerly, most salt cake used in the manufacture of kraft paper was imported, but this source of supply was cut off by the war. Mathieson began making this product in 1939, preventing a serious dislocation in the kraft paper business.

A new product, important to many branches of southern industry, is sodium chlorite, used as an improved bleaching and processing agent for textiles, paper, flour, and other materials. Never before available commercially, sodium chlorite is now being produced in quantity at the Niagara Falls plant.

It is unwise to attempt to pre-



dict the course of any business in these days, but it is safe to say that the progress of the Mathieson Alkali Works in the South points steadily into the future, particularly at Lake Charles. The natural gas, oil, and other varied resources of the district are a constant challenge to research, and only the expediency of the work in hand restricts further exploration in this direction.

Opinions Wanted

Montgomery, Alabama.

Editor, MANUFACTURERS RECORD:

Some of the civic clubs here and particularly the Lions Club, which will hold its International Convention in Toronto, are considering whether it is wise or not to send delegates. Will you kindly give us some opinions on this matter. It seems to me that merchants and manufacturers should get together to cope with unusual problems, keep up business morale, to make profits which Uncle Sam will take to help lick the Japs and the rest of the gang. Which would be better than even buying defense bonds. We feel that if the Government wanted these conventions stopped on account of interfering with traffic, it would say so.

W. B. deLemos, President,
DIXIE OFFICE SUPPLY COMPANY.

Masked for protection against dust and fumes, a workman at the Saltville plant fills drums with caustic soda.



SOUTH'S CONSTRUCTION CONTINUES AT HIGH RATE

EFFECT of the full-scale war effort has made itself decidedly felt in the South during the first two months of 1942 with the result that the total of contracts for that period is \$535,956,000, a figure well above the first two months of any other year, even 1941 when Southern construction reached its record peak.

Predictions that this would be a banner year for construction have been substantially borne out by the record established so far. A precipitous rise of awards in February supported by a stout total during January have launched the year at a rate practically ninety per cent ahead of the same two months of last year. The accelerated pace is due largely to further release of Federal funds into the channels of construction.

Private construction, despite expectations of severe inroads because of drastic restrictions, is twenty per cent in advance of the total for the comparable period of last year. Industrial awards, according to announced projects, are down forty-five per cent.

Public Building

Government building, exclusive of the Federally financed industrial operations, now stands above the three hundred million dollar mark for the two months. At this time last year the total was about eighty-three million dollars. The greater percentage of the current figure is wartime construction, which because of the speed required in accomplishment, must of necessity be to a considerable extent of a temporary nature.

Public housing and educational projects contributed to the increased activity, although in somewhat smaller proportions. Housing awards totaling \$35,081,000 in the South are more than twice the figure for January and February of 1941. The gain in school construction is slightly less in percentage, but it is strongly indicative of the mass migration to defense and industrial areas, where educational facilities are being rapidly expanded to accommodate the families of the newcomers.

Engineering

Engineering construction is ten times the aggregate accumulated in the first two months of 1941. The current total is \$78,889,000. This includes dams, drainage work and airport construction, with much of the emphasis placed on the latter type. Overtaxed water systems and sewage treatment plants in overcrowded defense production centers are being augmented by facilities costing three times the total of such work initiated in the comparable period of last year.

February

February, by far, has been the period of the most intensive activity in Southern construction. Seventy per cent of the awards massed this year are represented by the \$370,626,000 total for that month. Public building led all other types with a valuation of \$230,982,000, in which were included great new army training camps.

Next in importance was a \$71,924,000 total for industrial construction, as tabulated from reports received by the *Manufacturers Record*. While well above January's \$37,542,000, this figure was far below the \$126,472,000 for February of 1941. Engineering construction was third in rank, with a total of \$35,297,000, a drop from January's \$43,592,000, but almost nine times the \$4,150,000 for the second month of last year.

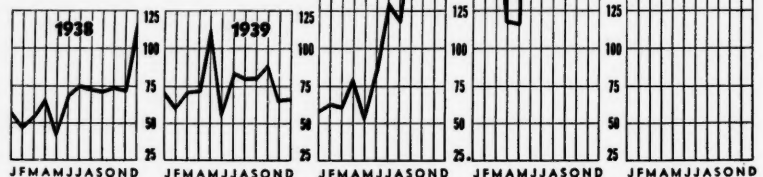
Private building gained as compared with both the preceding month and with the comparable month of 1941. The total for the current February is \$21,454,000; for January, \$10,678,000; for February of last year, \$18,522,000. Greatest contributor to all of these totals was residential construction. The proportionate percentage of this type of work to the total was largest during the current February.

Highway and bridge construction showed much improvement in February. Total of awards for roads and bridges in the sixteen States of the South, was \$10,969,000, or more than twice the amount of awards in January.

Large Southern Work

Wartime censorship regulations limit publication of detailed information on

Month-by-month trends in Southern contracts are indicated by the charts reproduced below. The total of construction awards made so far this year is \$535,956,000, to which February contributed \$370,626,000.



Two-Month Total High Record for Southern Contracts

by

S. A. LAUVER
News Editor

MANUFACTURERS RECORD FOR

South's Construction By Types

| | February, 1942 Contracts Awarded | Contracts to be Awarded | Contracts Awarded First Two Months 1942 | Contracts Awarded First Two Months 1941 |
|-------------------------------------------------------------------|----------------------------------------|-------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| PRIVATE BUILDING | | | | |
| Assembly (Churches, Theatres, Auditoriums, Fraternal | \$809,000 | \$975,000 | \$1,566,000 | \$3,563,000 |
| Commercial (Stores, Restaurants, Filling Stations, Garages) | 565,000 | 460,000 | 1,707,000 | 4,196,000 |
| Residential (Apartments, Hotels, Dwellings) | 19,963,000 | 2,405,000 | 28,467,000 | 17,914,000 |
| Office | 117,000 | 225,000 | 392,000 | 934,000 |
| | \$21,454,000 | \$4,065,000 | \$32,132,000 | \$26,607,000 |
| INDUSTRIAL | \$71,924,000 | \$94,725,000 | \$109,466,000 | \$202,361,000 |
| PUBLIC BUILDING | | | | |
| City, County, State, Federal | \$198,390,000 | \$88,922,000 | \$258,765,000 | \$60,631,000 |
| Housing | 29,589,000 | 91,660,000 | 35,081,000 | 18,723,000 |
| Schools | 3,063,000 | 19,911,000 | 6,409,000 | 3,886,000 |
| | \$230,982,000 | \$200,493,000 | \$300,255,000 | \$83,240,000 |
| ENGINEERING | | | | |
| Dams, Drainage, Earthwork, Airports | \$27,711,000 | \$17,763,000 | \$69,599,000 | \$2,232,000 |
| Federal, County, Municipal Electric | 1,476,000 | 56,204,000 | 1,796,000 | 3,779,000 |
| Sewers and Waterworks | 6,110,000 | 49,192,000 | 7,494,000 | 1,488,000 |
| | \$35,297,000 | \$123,159,000 | \$78,889,000 | \$7,199,000 |
| ROADS, STREETS AND BRIDGES | \$10,969,000 | \$23,433,000 | \$15,214,000 | \$17,890,000 |
| TOTAL | \$370,626,000 | \$445,875,000 | \$535,956,000 | \$337,597,900 |

military construction and industrial expansion. However, it may be revealed that development of Southern industry is being furthered during the present war. One of the most encouraging prospects is that new chemical manufacturing concentrations below the Mason and Dixon line will be the outcome of the emergency plants now being established.

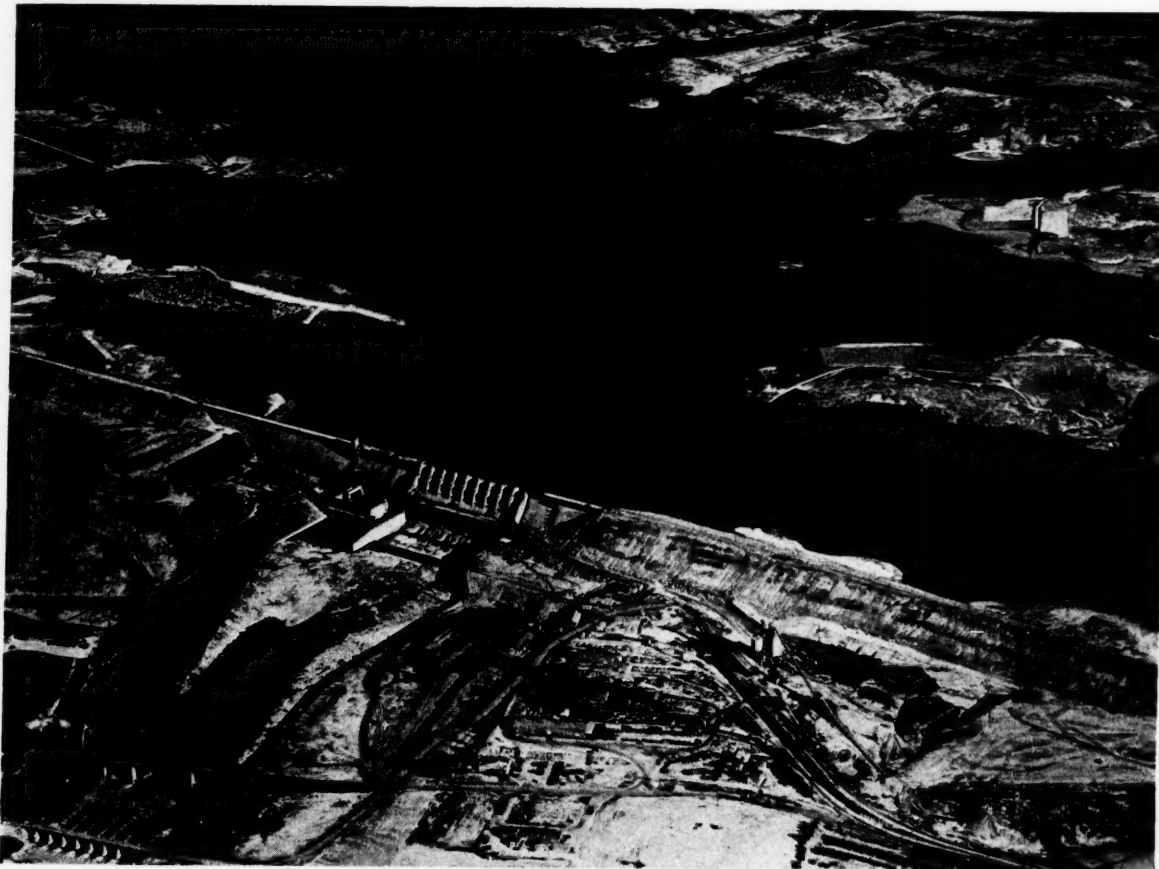
Big chemical plants including several

toluene factories, a huge floating dry dock and other ship repair and building facilities, new explosives manufacturing developments, phosphorous and magnesium plants, additional war materials establishments, increased steel making facilities and modern airplane producers were among the array of colossal projects active in the news during February.

South's Construction By States

| | February, 1942 Contracts Awarded | Contracts to be Awarded | Contracts Awarded First Two Months 1942 |
|--------------------|----------------------------------------|-------------------------------|-----------------------------------------------------|
| Alabama .. | \$10,702,000 | \$16,563,000 | \$13,517,000 |
| Arkansas .. | 3,494,000 | 11,230,000 | 4,331,000 |
| D. of C. .. | 5,650,000 | 17,563,000 | 10,904,000 |
| Florida .. | 18,098,000 | 28,888,000 | 31,394,000 |
| Georgia .. | 7,068,000 | 39,660,000 | 28,545,000 |
| Kentucky .. | 31,105,000 | 9,552,000 | 35,316,000 |
| Louisiana .. | 40,713,000 | 14,116,000 | 44,244,000 |
| Maryland .. | 15,764,000 | 36,926,000 | 28,756,000 |
| Miss. | 6,575,000 | 6,923,000 | 7,394,000 |
| Missouri .. | 5,903,000 | 5,055,000 | 7,209,000 |
| N. C. | 38,583,000 | 30,104,000 | 39,787,000 |
| Oklahoma .. | 51,558,000 | 37,621,000 | 51,896,000 |
| S. C. | 14,599,000 | 12,119,000 | 18,407,000 |
| Tenn. | 37,923,000 | 34,597,000 | 61,593,000 |
| Texas | 42,823,000 | 63,753,000 | 60,161,000 |
| Virginia .. | 36,688,000 | 72,428,000 | 61,185,000 |
| W. Va. | 3,380,000 | 9,677,000 | 25,344,000 |
| TOTAL | \$370,626,000 | \$445,875,000 | \$535,956,000 |

Below — Cherokee dam, \$30,500,000 project of the Tennessee Valley Authority, was dedicated early in January, 16 months after construction was authorized and four months ahead of schedule. It is located on the Holston River, and will have an initial installation of 90,000 kilowatts in three generators. The dam is 6,719 feet long and rises 175 feet above the stream bed. First power from Watts Bar dam, a sister T.V.A. project, was produced at the first of February, twelve months earlier than originally planned. This Tennessee River project is 97 feet high, 2,965 feet long and has a reservoir extending 72 miles upstream.



MARCH NINETEEN FORTY-TWO

\$1,349,000,000 Increase in War Contracts and Allocations to Southern States During January

War contracts and allocations distributed by government agency to the southern states for the period June 1, 1940 through January, 1942, totaled in excess of \$8,348,890,000 compared with \$6,999,822,000. This is an increase of \$1,349,000,000 or more than 16 percent during January. Totals by

state and government agency for the entire period are shown in the accompanying table.

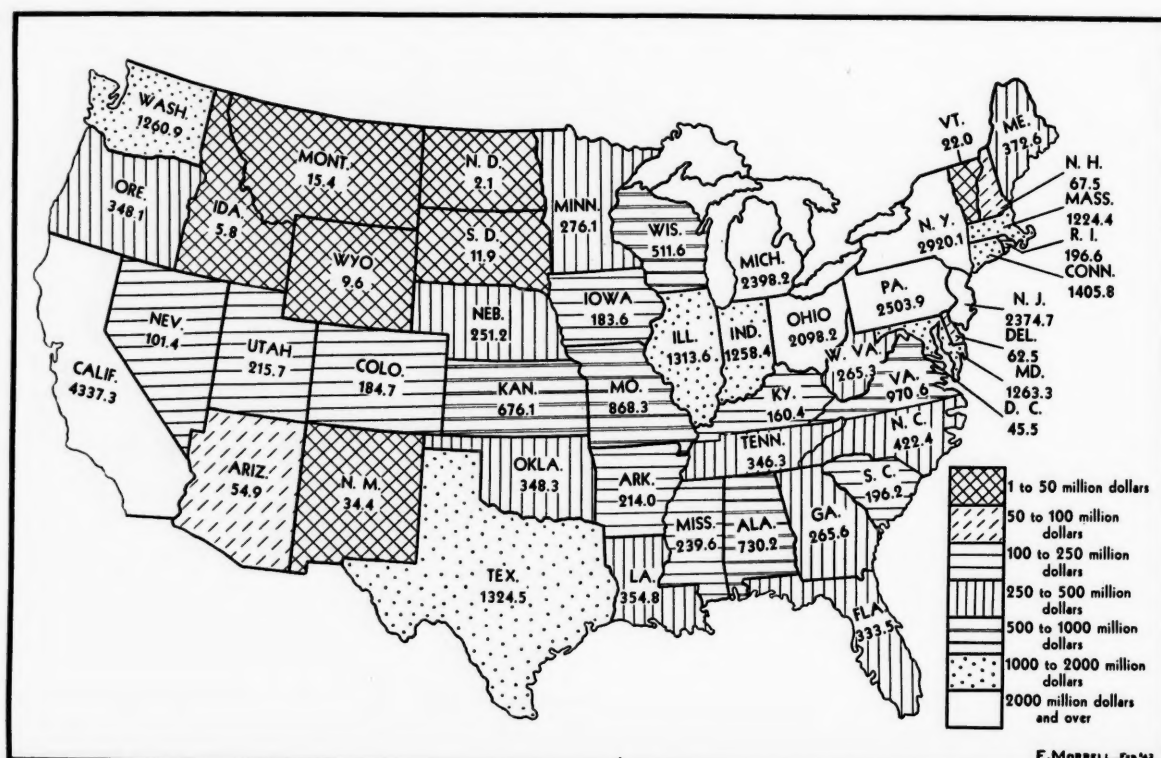
The total value shown for the Army, Navy and Maritime Commission is for awards of \$50,000 or more. Smaller contracts and all awards for foodstuffs are omitted.

Major War Supply and Facility Contracts and Allocations, June, 1940, Through January, 1941
(Thousands of Dollars)

| State | Army, Navy and Maritime Commission | | | | Dept. of Commerce C.A.A. | Federal Works Agency | Federal Security Agency | Federal Loan Agency R.F.C. | Total |
|----------------------|------------------------------------|-----------|------------|------------|-----------------------------|----------------------------|-------------------------------|-------------------------------------|-------------|
| | Aircraft | Ships | Miscell. | Industrial | | | | | |
| Alabama | 238,334 | 123,310 | 200,900 | 83,743 | 339 | 13,542 | 4,210 | 5,744 | 730,154 |
| Arkansas | 180 | 583 | 156,530 | 51,587 | 1,697 | 3,172 | 433 | 214,002 | 45,534 |
| District of Columbia | 101,698 | 1,722 | 13,957 | 17,226 | 11,406 | 933 | 110 | 333,530 | 265,627 |
| Florida | 18,661 | 46,474 | 21,264 | 161,221 | 739 | 12,318 | 4,491 | 40,239 | 160,415 |
| Kentucky | 107,711 | 10,472 | 91,815 | 126,287 | 858 | 11,523 | 3,596 | 2,500 | 354,762 |
| Louisiana | 522,131 | 316,405 | 162,032 | 142,449 | 88,592 | 23,983 | 2,955 | 349 | 1,263,337 |
| Mississippi | 112,263 | 19,277 | 23,871 | 68,807 | 441 | 7,304 | 3,983 | 3,477 | 239,557 |
| Missouri | 134,632 | 905 | 290,590 | 326,117 | 86,201 | 25,056 | 4,319 | 457 | 868,277 |
| North Carolina | 129,250 | 55,363 | 10,406 | 207,242 | 15,799 | 4,243 | 5 | 422,399 | 348,341 |
| Oklahoma | 160,710 | 7,548 | 107,032 | 63,683 | 549 | 4,998 | 3,611 | 210 | 196,204 |
| South Carolina | 10,800 | 94,605 | 24,021 | 75,334 | 1,246 | 22,583 | 2,500 | 235 | 346,293 |
| Tennessee | 35,567 | 3,928 | 84,974 | 121,523 | 89,014 | 139 | 6,677 | 4,332 | 1,324,511 |
| Texas | 267,115 | 250,600 | 74,174 | 380,646 | 310,623 | 2,145 | 27,977 | 9,870 | 970,618 |
| Virginia | 434,123 | 50,297 | 178,641 | 283,230 | 19,200 | 3,807 | 7 | 265,329 | 38,414,909* |
| West Virginia | 18,920 | 40,090 | 178,496 | 1,645 | 16,227 | 3,896 | 55 | | |
| South | 1,120,155 | 1,743,778 | 1,099,806 | 2,089,460 | 1,930,687 | 8,630 | 256,162 | 67,357 | 62,040 |
| United States | 8,284,635 | 6,409,308 | 10,207,922 | 7,122,997 | 4,518,904 | 21,313 | 684,035 | 214,982 | 744,904 |

* Includes \$15,909,000 for the United States under the Farm Security Administration of the U. S. Dept. of Agriculture for defense housing. Of this, \$6,235,000 was for the South—Ala., \$32,000; Md., \$4,441,000; Miss., \$134,000; N. C., \$91,000; Tenn., \$115,000; Tex., \$109,000; and Va., \$1,313,000.

"Aircraft" includes contracts for airframes; airplane engines, propellers, and other parts; and certain related equipment such as parachutes and aircraft pontoons, armament, instruments, and communication equipment are excluded. "Ships" includes contracts for the construction of new vessels of all kinds; the purchase of used ships; and ship conversion, recommissioning, and repair. Propulsion machinery (when separately contracted for), armor, armament, navigation and radio equipment, parts, and materials are excluded.



E. MORRELL, Feb. 42

to

THESE FIRMS

WANT SUBCONTRACTS

**If you want
a Contract or
Subcontractor**

write us—

Manufacturers Record

TE-2. Machinery

General Electric 400 amp. welding machine, mounted on wheels; two General Electric 300 amp. welding machines, mounted on wheels; General Electric 150 amp. welding machine, mounted on wheels; Rogers vertical 34" boring mill, 18" under tool holder (minimum tolerance .008); Bickford radial 40" drill, horizontal range of head 35"—15" spindle traverse size of table 20" x 20" vertical range of arm 3'1" (min. tol. .08); Cincinnati 28" upright drill, 11" spindle feed 30" bed clear. (Vert), (min. tol. .005); Silver Mfg. 20 light upright drill, 8" spindle feed 18" bed clear. (Vert), (min. tol. .005); Niles open side planer, 26" under rail 26" x 10'2" stroke (min. tol. .005); Niles open side planer, 36" under rail 48" x 12'0" stroke (min. tol. .005); H. Steele & Co. keyseater, 1" key in 48" dia. wheel (min. tol. .008); Uster threading machine, up to 2" dia. (min. tol. .005); Warner Swasey turret lathe, 18" swing, max. travel of carriage 12" (min. tol. .003); Greaves Klusman engine lathe, 18" swing 6'8" between centers (min. tol. .001); engine lathe, 22" swing 40" between centers (min. tol. .005); Schumacher & Boyle engine lathe, two centers—36" swing max. 18" min. 9'0" centers (min. tol. .003); Cincinnati #4 column and knee (plain) milling machine, 48" long x 12" wide table (non-rotating), (min. tol. .003); two Kelly Gear & Tool Company hack saws; bench grinder (½ h. p.); bench grinder (¼ h. p.); two assembled in pedestal grinders (2 wheels each—2¼" wide x 16" dia.).

N-1. Electrical Equipment Manufacturer

One 8" x 8'-0" line shaft driven lathe; two 20" motor driven automatic drill presses with back gear; 20" line shaft driven drill press; low speed motor driven bench drill; five high speed motor driven bench drills; special motor driven parallel grinder with double wheels; three line shaft driven abrasive disc grinders, 22" diameter, with double wheels; motor driven abrasive belt grinder; special motor driven lapping machine for finishing switch contacts; lot of special benders for making U bolts; 8'-0" metal bender; automatic feed power hack saw; complete saw table equipment for cutting crating material; band saw for use in making patterns; emery wheel stand with two wheels; two paint spray guns; two high speed buffing wheels; lot of pattern making tools; complete bench space and hand tools for working 15 bench men; Foundry building—approximately 1500 sq. ft. with three coke fired brass furnaces and fully equipped with molders benches,

The facilities listed here are those of plants desirous of executing subcontracts for war material. Others were printed in the February Manufacturers Record and still others will be listed as they are received. If you are making equipment or supplies under government contract and possibly can use the services of any of these plants under a subcontract, write us for the name and address, or if you need the services of a subcontractor of any kind write us and we will help you find one.

If you want a contract—prime or sub—write us.

The following letter accompanied one of the inventories on this page:

Editor,
Manufacturers Record:

In your February, 1942 issue, we notice the very interesting page "Need a Sub-contractor?"

We are enclosing a book which we have produced to help us in our search for sub-contracts—"Craftsmen in National Defense."

You will notice that this book lists all of our equipment for handling sheet metal fabrication, sub-contract.

If you can include us on your page, "Need a Sub-Contractor?" we will appreciate it very much.

LIST YOUR FACILITIES WITH THE MANUFACTURERS RECORD.

pyrometer equipment, core oven, and hand tools for working six molders; stake body Ford V-8 truck.

TE-1. Foundry & Machine Shop

One 9" swing lathe; 22" swing lathe; 12" swing lathe; drill press; emery; power hack saw; knife grinder; shaper; planer; gas welder; electric welder.

MA-1. Sheet Metal Work

7 shears, various types; three saws (power, circular and slitting); one folder; two benders; three rollers; ball bearing brake; rivet spinner; sheet metal break machine, 10 ft. long; two spot welders (12 K.V.a. and 20 K.V.a.); one 150 amp. arc welder; two flame welders; large machine shop already engaged in defense work but certain facilities available to supplement sheet metal work. Additional building just available—can expand facilities for regular sheet metal work or for amplifiers, electronic devices, etc. Can also handle swaging work.

SUBCONTRACTOR WANTED

Subcontractor for dies for drop forgings ranging from 2 lbs. to 120 lbs. and general facilities for heat treating forgings approximately 12 in. by 36 in. and ranging from ¾ lbs. to 120 lbs. Apply direct to Contract Distribution Division, War Production Board, 200 Todd Building, 4th & Market Streets, Louisville, Kentucky.

I-1. Steel Fabricators

Eighteen shears: capacity—No. 12 USS gauge and lighter, in lengths up to 10'; 51 punch presses: capacity—3 to 60 tons, stroke—1" to 3", bed plate—from 6" x 12" to 24" x 36"; 15 horn punch presses: capacity—22 to 45 tons, stroke—1½" to 3", bed plate—from 12" x 18" to 26" x 26"; 28 double crank presses: capacity—22 to 200 tons, stroke—2" to 10", bed plate—from 39" x 12" to 58" x 33"; 36 power brakes: capacity—up to No. 12 USS gauge and lengths up to 10 feet, maximum, stroke—2" to 6½"; 40 spot welders: capacity—from 13 K. V. A. to 150 K. V. A. 13" to 42" throat; 6 heavy capacity arc welders; 7 portable gas welders. Finishing equipment: 10 gas fired baking ovens ranging in size from 6' x 5' x 50" to 11' x 7' x 50" and 3 oil fired baking ovens 5' x 12' x 48", with temperature range up to 400 degrees F. and necessary washing machines, dip tanks and spray equipment for cleaning and finishing material prior to baking operation. Tool room equipment: modern tool rooms equipped to produced dies and jigs for all production equipment. Miscellaneous equipment: spin riveters, electric hand drills, drill presses, belt sanders, and general bench equipment.

Mo-1. Steel Truck Body Manufacturer

Twenty-eight electric arc welding machines; 9 cutting torches; gas welding torch; two Buffalo forgers with motors and blowers; 50 electric hand drills and screw drivers ranging from ¼ in. to ½ in.; 5 electric sanders; 5 air driven sanders; circular cutting saw, portable; 3 Unishers, ranging in capacity from 20 Ga. to 14 Ga.; Curtiss compressor 2-stage motor driven by 20

(Continued on page 59)

Authorized War Expenditures \$145,400,000,000 To Date

Authorized expenditures for war, including foreign orders, from the beginning of the defense effort through February 15, 1942, plus net funds requested for war purposes, on that date, total an estimated \$145,400,000,000.

This amount includes Reconstruction Finance Corporation commitments of \$5,130,000,000, and foreign orders in the United States of \$4,066,000,000.

Negotiated War Contracts Replace Bidding

Broadening of procurement policies to insure the widest possible placement of war supply contracts and a much greater utilization of small plants and factories, is the purpose of a directive recently signed by Donald M. Nelson, Chairman of the War Production Board.

The directive has these provisions:

1. Effective at once, all military supply contracts are to be placed by negotiation instead of by competitive bidding, unless the Director of Purchases, WPB, specifically authorizes the use of competitive bids.

2. In placing contracts, primary emphasis is to be put upon speed of delivery.

3. Contracts for standard and semi-standard articles relatively simple to make shall be placed with smaller concerns, so that the facilities of the larger, more fully equipped firms may remain available for production of more difficult and complicated items.

4. Subject to these considerations, contracts are to be placed with concerns which need the smallest quantities of new machinery and equipment.

Life Insurance In War Time

Mr. George L. Harrison, President of the New York Life Insurance Co., in presenting the Company's 97th annual report says: "War, particularly so devastating and extensive a war as the present one, does not lessen in the slightest either the responsibility to protect the policyholders or the opportunity for service. * * * This company has lived through four wars in which the United States was involved. * * * During each the company continued to grow in usefulness and service, both to policyholders and the country. It safeguarded its assets, met its obligations, and at the

same time, when needed, it aided in the financing of those wars. We must do no less today."

Figures released with Mr. Harrison's report amply justify this statement. They show that for the first time in the company's history the number of its policies exceeded 3,000,000, while insurance in force on December 31, 1941, amounted to \$7,013,883,403. New life insurance was written in 1941 to the amount of \$446,614,300, an increase of \$20,644,000 over 1940.

Another important item of information was that the volume of terminations in the form of lapses was the lowest in over twenty years.

The company's assets aggregated \$2,987,268,732, and of these United States government obligations to the amount of \$887,761,424 represented almost 30 per cent of total assets.

The reserve for insurance and annuity contracts is the largest single item in liabilities and amounted to \$2,407,683,152. Payments to policyholders and beneficiaries in the year past amounted to \$201,061,647.

Southern Field Offices of the Division of Contract Distribution

A complete list of the southern field offices of the Division of Contract Distribution of the War Production Board was printed in the January MANUFACTURERS RECORD. To keep this information up to date, changes and additional offices recently opened are listed each month in the MANUFACTURERS RECORD. Those to be noted this month are as follows:

ARKANSAS

Fort Worth
Frank P. DeLarzelere, Mgr.
13 North Seventh Street

FLORIDA

Jacksonville
Charles C. McCubbin, Act. Mgr.
730 Lynch Building
Miami
Forrest D. Banning, Act. Mgr.
701 Congress Building

GEORGIA

Atlanta
J. V. Booth, Act. Mgr.
Suite 150, Hurt Building

LOUISIANA

Shreveport
Clem S. Clark, Mgr.
916 Giddens Land Bldg.
Milan & Marshall Sts.

MARYLAND

Baltimore
G. W. Creighton, Mgr.
1254 Baltimore Trust Bldg.

MISSOURI

Kansas City
R. W. Webb, Mgr.
508 Mutual Building
13th & Oak Streets

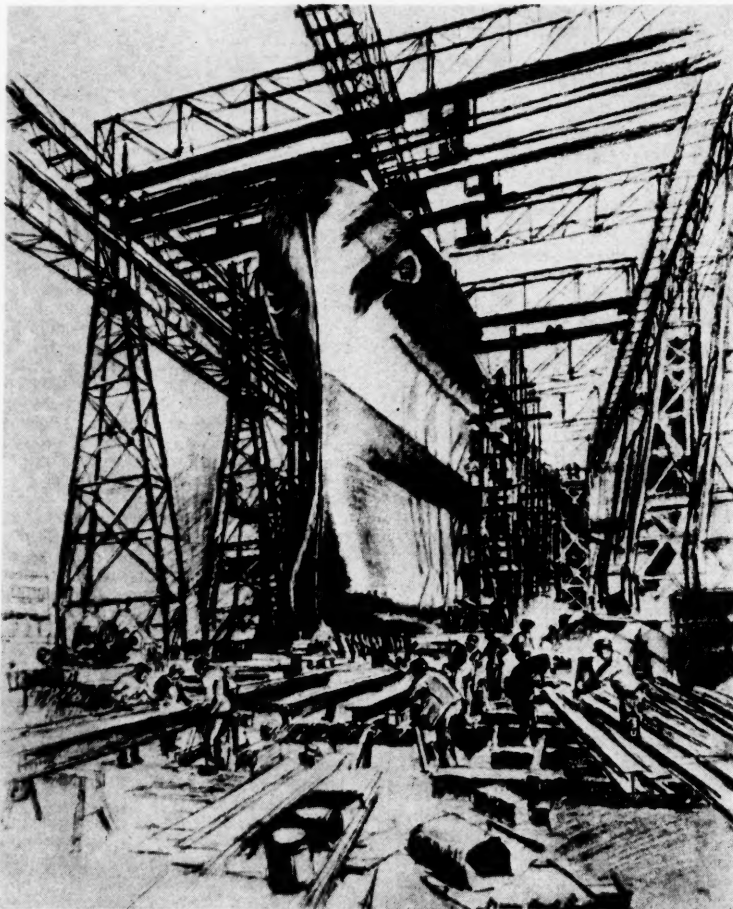
NORTH CAROLINA

Charlotte
Eugene C. Ochsenreiter, Mgr.
New Liberty Life Building

(Continued on page 54)

The USS Alabama, newest and second consecutive battleship of the United States to be named for a southern state, was launched last month at Norfolk, Virginia, months ahead of schedule. This view of the vessel under construction is from one of the drawings recently exhibited at the Corcoran Gallery of Art, Washington, D. C., featuring naval defense activities and was prepared under Navy authorization by Vernon Howe Bailey.

Official U. S. Navy Photo



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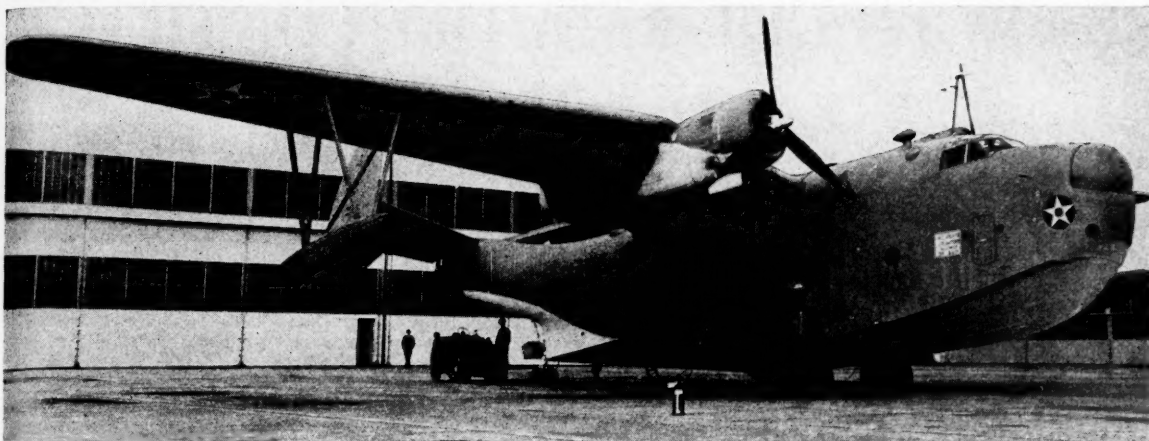
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Starting a new generation of warbirds of the sea, the "Mariner," new long range patrol bomber, has successfully completed its first flight tests and is soon to be produced in numbers at the plant of Glenn L. Martin Co. Elaborate tooling to speed the quantity production has already been installed. Bigger and more powerful than its predecessor, the Navy's PBM-1, the "Mariner,"

which is designated the PBM-3, has the same shaped wings and toed-in rudders. In addition to the new Navy model, the B-26, powerful medium U. S. Army bomber, and the "Baltimore," a smaller bomber for the British, are being produced at the Martin plants.

War Industrial Facilities

Value of Industrial Facilities by Type of Product and Source of Funds
Through December 31, 1941
(Thousands of Dollars)

| Type of Product | Total Estimated Cost | Public Estimated Cost | Private Estimated Cost |
|-----------------------------------------------------------------------------------|----------------------------|-----------------------------|------------------------------|
| TOTAL | \$7,365,971 | \$6,039,887 | \$1,326,084 |
| Aircraft, Aircraft Engines, Parts and Accessories | 1,066,621 | 960,264 | 106,357 |
| Ships, Construction and Repairing | 858,518 | 826,472 | 32,046 |
| Combat and Motorized Vehicles | 175,073 | 148,422 | 26,651 |
| Guns | 414,238 | 378,597 | 35,641 |
| Ammunition, Shells, Bombs, etc. | 458,074 | 411,284 | 46,790 |
| Explosives, Ammunition Assembling and Loading (Excl. Small Arms Ammunition) | 1,627,551 | 1,622,670 | 4,881 |
| Iron and Steel Products | 855,718 | 658,157 | 197,561 |
| Non-Ferrous Metals and their Products .. | 676,247 | 478,641 | 197,606 |
| Machine Tools and Other Metal Working Equipment | 95,127 | 31,355 | 63,772 |
| Machinery, Electrical Equipment and Appliances | 316,993 | 202,857 | 114,136 |
| Chemicals | 363,876 | 189,438 | 114,438 |
| Petroleum and Coal Products | 63,149 | 36,792 | 26,357 |
| Miscellaneous Manufacturing | 132,703 | 57,296 | 75,407 |
| Non-Manufacturing | 322,083 | 37,642 | 284,441 |

New Construction For 1942 Estimated at \$11,500,000,000

The enormous volume of work to be done on military and naval facilities, the expansion of plants for war production and other projects essential to the war effort will make 1942 the biggest year in the history of the construction industry.

In spite of a drastic curtailment of non-essential projects, total construction in 1942 will be around 11.5 billion dollars as compared with 10.8 billion dollars in 1941.

Domestic construction of cantonments, air fields, naval stations and other military facilities will be close to 4 billion dollars this year, more than double the volume in 1941. Industrial and commercial buildings, mostly to expand our output of war goods, will take about 2.9 billion dollars as against 2.3 billion dollars last year.

Residential construction will be cut about 60 per cent and will be concentrated in the critical areas where priorities are available. There will be drastic curtailment of most other types of construction but the volume in these categories will still be substantial because of the essential nature of many projects.

Southern Firms Get Barge Contracts

Six companies have been awarded contracts by the Maritime Commission for the construction of a total of 450 non-propelled wooden barges. The successful bidders were:

| Contractor | No. of Barges | Price per Barge |
|-----------------------------------------------------------------|------------------|--------------------|
| Palatka Shipbuilding Co., Palatka, Fla. . . | 100 | \$2,295.09 |
| The City Lumber Co., Bridgeport, Conn. . . | 100 | \$2,489.00 |
| Brownsville Shipbuilding Corp., Brownsville, Tex. | 50 | \$2,589.00 |
| C. D. Johnson Lumber Corp., Portland, Ore. . | 100 | \$2,667.30 |
| Scott Graff Co., Industrial Construction Corp., Duluth, Minn. . | 50 | \$2,790.00 |
| Lyons Construction Co., Whitehall, Mich. . . | 50 | \$3,000.00 |

The barges, to be delivered unassembled F.O.B. freight cars at contractor's

plant, are to have a carrying capacity of 90 tons. They will be 60 feet long, 18 feet wide, and six feet in depth.

NEW CONSTRUCTION BY FUNCTION AND OWNERSHIP, 1940-42 (in millions of dollars)

| | 1940 | 1941 | Forecast 1942 |
|---------------------------------------|----------------|-----------------|------------------|
| Total New Construction | \$7,085 | \$10,811 | \$11,500 |
| Total private | 4,409 | 5,236 | 2,900 |
| Residential building (non-farm) | 2,323 | 2,675 | 1,200 |
| Non-residential building | 973 | 1,191 | 450 |
| Commercial | 320 | 350 | 150 |
| Industrial | 440 | 600 | 200 |
| All Other | 213 | 241 | 100 |
| Farm | 468 | 540 | 550 |
| Public Utility | 645 | 830 | 700 |
| Total public | 2,676 | 5,575 | 8,600 |
| Residential building | 202 | 482 | 700 |
| Non-residential building | 501 | 1,672 | 2,750 |
| Commercial and Industrial | 149 | 1,312 | 2,500 |
| All Other | 352 | 360 | 250 |
| Military and Naval | 473 | 1,768 | 3,900 |
| Highway | 945 | 1,013 | 700 |
| Other public works | 555 | 640 | 550 |

HOW TO GET AN ARMY CONTRACT

CONTINUING the information given in previous issues of the MANUFACTURERS RECORD as to how to get an army contract and the articles purchased by various depots of the services, there is presented below the addresses of other service branches and the items purchased by each. Manufacturers whose facilities are producing or capable of producing any item of military requirements should communicate directly with the agency responsible and request that the name of the company be placed on the mailing list to receive invitations to bid when purchases are to be made.

Ordnance Department establishments are divided into three groups. Group A-1 consists of the **Frankford Arsenal, Philadelphia, Pa.**, and **Picatinny Arsenal, Dover, N. J.**

Group A-2 includes: **Rock Island Arsenal, Rock Island, Ill.**; **Watertown Arsenal, Watertown, Mass.**; **Watervliet Arsenal, Watervliet, N. Y.**; **Springfield Armory, Springfield, Mass.**

Group B includes: **Aberdeen Proving Ground, Aberdeen, Md.**; **Augusta Ordnance Depot, Augusta, Ga.**; **Benicia Ordnance Depot, Benicia, California**; **Charleston Ordnance Depot, N. Charleston, S. C.**; **Curtis Bay Ordnance Depot, Curtis Bay, Md.**; **Delaware Ordnance Depot, Pedricktown, N. J.**; **Erie Ordnance Depot, LaCrosse, Ohio**; **Hawaiian Ordnance Depot, Ft. Shafter, T. H.**; **Nansemond Ordnance Depot, Portsmouth, Va.**; **Ogden Ordnance Depot, Ogden, Utah**; **Raritan Ordnance Depot, Metuchen, N. J.**; **San Antonio Ordnance Depot, San Antonio, Texas**; **Savanna Ordnance Depot, Savanna, Ill.**; **Wingate Ordnance Depot, Fort Wingate, N. M.**

Each establishment in all groups usually buys its own general maintenance supplies; packing and shipping materials—lumber, box shooks, strapping, etc.; electrical supplies—light & power; general construction supplies; automotive equipment and maintenance supplies; paints and oils for Ordnance materiel.

Items purchased by each of the establishments in groups A-1 and A-2 only are: machines and machine tools—lathes, shapers, grinders, etc.; iron & steel—wire, bars, rods, plates, shapes, forgings and castings; copper, brass and bronze—wire, bars, rods, plates, strips, castings and forgings; aluminum and aluminum alloys, bars, plates, rods, shapes, sheets, strips and castings; chemical and physical laboratory supplies; electro-plating equipment and supplies; heat-treating furnaces and accessories; wood-working machinery and supplies; manufactured metal components; welding equipment and supplies.

In addition, only establishments in group A-1 purchase: industrial chemicals; weighing scales—sensitive balances—and larger; explosive processing equipment; explosives and separate

explosive ingredients; cartridge brass; gages, dies, etc.; optical instruments and accessories.

Finally, only establishments in Group A-2 buy: spray-painting equipment and supplies; dies, molds, gages, etc.

Air Corps purchases are made by the **Contract Section, Air Corps, Wright Field, Dayton, Ohio**, and cover: airplanes; airplane parts, equipment, accessories; flying equipment and supplies; lighting and photographic equipment; parachutes; special and technical instruments and equipment; aviation fuel.

Chemical Warfare Service purchases are made at each of the following: **Edgewood Arsenal, Edgewood, Maryland**; **Boston C. W. Procurement District, 2000 U. S. Post Office Building, Boston, Mass.**; **New York C. W. Procurement District, 292 Madison Avenue, New York, N. Y.**; **Pittsburgh C. W. Procurement District, American Bank Building, Sixth Ave., and Grant St., Pittsburgh, Pa.**; **Chicago C. W. Procurement District, 1506 N. Wacker Drive, Chicago, Ill.**; **San Francisco C. W. Procurement District, Room 201, 1355 Market Street, San Francisco, California.**

The items procured by these depots include: chemicals; ceramics; chemical plant equipment; specially prepared fabrics; duck, felt, cloth, and webbing; gas masks and components of fabric, glass, metal, moulded rubber, and plastics; machines and machine tools; activated charcoal.

Signal Corps purchasing is decentralized as follows: **Officer in Charge, Philadelphia Signal Corps Procurement District, Wissahickon Ave. and Abbotsford Rd., Philadelphia, Pa.**—radio communication equipment; telephone and telegraph equipment; wire and cable; meteorological equipment; signal corps photographic equipment; coding and cipher devices; pigeon equipment.

Officer in Charge, Chicago Signal Corps Procurement District, 1819 West Pershing Road, Chicago, Illinois—telephone and telegraph equipment; coding and cipher devices; wire and cable; radio communication equipment.

Officer in Charge, San Francisco Signal Corps Procurement District, Presidio of San Francisco, California—small quantities of miscellaneous equipment covering telephone and telegraph; wire and cable; radio communication equipment, and certain pigeon equipment and accessories.

Director, Aircraft Radio Laboratory, Wright Field, Dayton, Ohio—special experimental research and development equipment for aircraft communications, and navigational purposes.

Director, Signal Corps Laboratories, Fort Monmouth, Red Bank, New Jersey—special communication equipment for motorized and armored forces; parachute, and other special designs of communication equipment; fire control and

ground radio communication equipment; experimental research and development equipment for communication purposes.

Officer in Charge, Signal Corps Photographic Laboratory, Army War College, Washington, D. C.—photographic equipment.

Limited purchases of the above items are also made by: **The Chief Signal Officer, Munitions Building, Washington, D. C.** and by **The Signal Officer** at each of the nine Corps areas.

Corps of Engineers purchases are made by the **Contracting Officer, Office of the Chief of Engineers, Room 2215, War Department, Washington, D. C.**, and include: corrugated steel arches; cotton and canvas bags; drafting, photographic, lithographic, photo-engraving, and surveying equipment; steel bridges, buildings, dredges, power shovels, storage tanks, sawmills; heavy machinery, boilers, cranes, hoists, jacks, hydraulic presses, transformers, gasoline and electric engines; locomotives, railroad cars, and air-brake equipment; hand tools; dump wagons; camouflage equipment, air compressors and tools.

Engineer supplies and equipment of a nature similar to that listed above are purchased to a limited extent by the Engineer at each of the nine Corps areas and at a few other localities.

Medical Corps purchases are made by the **New York Medical Depot, Kenyon Building, 57th St. and First Ave., Brooklyn, N. Y.**, and the **St. Louis Medical Depot, Second & Arsenal Streets, St. Louis, Missouri**. Items purchased consist of: biologicals, drugs, chemicals, laboratory stains; medical, dental, surgical, and laboratory supplies; surgical, dental, hospital, and laboratory equipment; diagnostic, surgical, and dental instruments; X-Ray machines and supplies; physiotherapy equipment; surgical appliances and dressings; field equipment; mess equipment; textile products. Veterinary equipment and supplies are procured only at the St. Louis Depot.

For the Coast Artillery Corps, submarine mine equipment and supplies are purchased at the **Submarine Depot, Fort Monroe, Va.**, and scientific laboratory equipment at the **Coast Artillery School, Fort Monroe, Va.**

State Geologists Elect Southerner As President

At the annual meeting of the Association of American State Geologists held last month, the following officers were elected for 1942: **Paul H. Price, President**, (State Geologist of West Virginia); **Earl K. Nixon, Vice President**, (Director State Department of Geology and Mineral Industries of Oregon); and **Robert H. Dott, Secretary-Editor**, (Director, Oklahoma Geological Survey).

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FACILITIES AVAILABLE FOR WAR WORK

THE plea that every manufacturer spare no effort in the immediate production of material and equipment needed for the prosecution of war is one to which we all subscribe. In making that plea, Donald Nelson, chairman of the War Production Board, indicated that industry is not doing all that it might do. Such an indictment is possibly true for there may be men and firms who are not doing their share. But, there are a large number of plants able and willing to go "all-out" and are held up by a lack of materials—raw, primary, and secondary.

There also are a number of plants anxious as well as able, to do whatever is asked of them and they cannot get the work. In this and the preceding issue of the MANUFACTURERS RECORD has been listed the facilities of such plants—small, it is true, but willing and able to contribute their share. On page 58 of this issue is a letter from a firm, together with a list of its facilities, that speaks for itself. The conclusion reached here is tacitly substantiated by a nation-wide survey just submitted to the War Production Board by Joseph W. Frazer, President of Willys-Overland Motors.

On the basis of the Frazer survey, which covered all automobile dealers in the country, engineers estimate that if all existing machines in auto shops were pooled, a hypothetical arms factory of more than 250,000,000 square feet, or approximately 10 miles wide

and 10 miles long, could be constructed. This would employ more than 185,000 skilled mechanics and would be equipped with more than 18,000 lathes, 15,000 grinding machines, 1,400 shapers, almost 16,000 drilling machines, 52,000 welding units, 40,000 buffing machines and 1,600 screw machines. It would also have a vast amount of miscellaneous equipment, all of which might be harnessed to the war effort.

Mr. Frazer said that returns had been received from 4,131 dealers which represented approximately 10 per cent of the total and that a careful study of these questionnaires revealed that much of the idle equipment could be used to manufacture many types of armament parts other than those requiring the highest type of precision work. For example, lathes could turn out from \$4 to \$10 worth of work an hour on such jobs as thread cutting, shaft turnings and others; milling machines could be used for gear cutting; grinders for smoothing down a variety of airplane, tank and marine parts.

"Although reports from the machine tool industry indicate that increased production is rapidly overcoming acute shortages apparent six months ago," Mr. Frazer said, "events since Pearl Harbor emphasize the urgent need for utilizing every machine available in America's small manufacturing shops in our all-out effort to offset the production peak which the Axis nations are expected to reach this spring."

He pointed out that many of the machines in auto shops are similar to thousands now being used in England's highly successful "bits and pieces" program which has brought small shops in that country into the war effort.

On the basis of the actual returns from 10 per cent of the dealer body, the listing reveals that the following tools are standing idle in America's dealer shops waiting to be put to war work: 1,836 lathes, with carriages varying from 4 to 22 feet and with swings from 6 to 22 inches; 168 milling machines from 12 to 30 inches in size; 135 shapers, with stroke varying from 6 to 24 inches; 4,291 grinders up to 18 inches in size; 1,591 drilling machines both single and multiple; 4,683 air compressors; 5,168 units of welding equipment; 13,614 vises; 3,964 buffing machines; 8,497 portable electric drills; 159 screw machines; 6,516 pulleys; 6,009 belts; 27,115 feet of line shafting.

The total amount of floor space reported suitable for manufacturing purposes was 27,203,754 square feet. The survey also revealed that there are currently 18,796 mechanics in automobile shops and garages who could be employed in the war effort and that 29,148 more mechanics are available, if needed. The dealer establishments have approximately 501,297 lineal feet of bench space.

A tabulation of the facilities available in the South, according to actual returns is given below.

Machine Tools, Manufacturing Facilities and Manpower Available for War Production in Automobile Dealer Shops in the South

(From the Willys-Overland Survey)

| | Ala. | Ark. | Fla. | Ga. | Ky. | La. | Mo. | Miss. | N. C. | Okla. | S. C. | Tenn. | Tex. | Va. | W. Va. | South |
|-------------------------------------------|-------|------|-------|-------|-------|-----|-------|-------|--------|-------|--------|-------|-------|--------|--------|--------|
| No. of dealers reporting | 25 | 17 | 48 | 37 | 54 | 25 | 41 | 31 | 98 | 54 | 59 | 23 | 33 | 130 | 72 | 795 |
| Floor space available (thousand sq. ft.) | 196 | 91 | 332 | 231 | 455 | 131 | 411 | 156 | 883 | 400 | 383 | 149 | 499 | 910 | 428 | 6,124 |
| Lathes | 8 | 3 | 16 | 5 | 28 | 9 | 24 | 9 | 50 | 19 | 20 | 10 | 6 | 31 | 19 | 274 |
| Milling machines | 1 | .. | .. | .. | 4 | 1 | 4 | .. | 3 | 1 | .. | 2 | 1 | 2 | 1 | 22 |
| Shapers | 1 | .. | 1 | 1 | 5 | 1 | 2 | .. | 6 | 1 | 1 | 1 | .. | 11 | 5 | 37 |
| Grinders | 20 | 9 | 52 | 27 | 62 | 21 | 56 | 28 | 124 | 58 | 61 | 26 | 64 | 172 | 37 | 925 |
| Drilling machines (single) | 5 | 4 | 16 | 11 | 14 | 6 | 15 | 11 | 30 | 17 | 17 | 7 | 7 | 41 | 27 | 242 |
| Drilling machines (double) | .. | .. | 3 | 4 | 8 | .. | .. | .. | 4 | .. | .. | .. | .. | 3 | 2 | 24 |
| Air compressors | 29 | 22 | 57 | 38 | 62 | 29 | 55 | 32 | 113 | 62 | 69 | 24 | 34 | 135 | 83 | 890 |
| Welding equipment (units) | 41 | 24 | 62 | 44 | 88 | 35 | 59 | 51 | 133 | 77 | 92 | 29 | 50 | 187 | 95 | 1,130 |
| Misc. equipment suitable for mfg. (units) | 11 | .. | 22 | 15 | 25 | 3 | 16 | 27 | 76 | 24 | 41 | 9 | 16 | 73 | 28 | 409 |
| Bench space (lineal feet) | 2,554 | 910 | 3,589 | 3,268 | 4,249 | 864 | 2,965 | 2,260 | 17,530 | 4,882 | 10,409 | 1,786 | 2,395 | 18,199 | 5,234 | 84,953 |
| Vises | 95 | 51 | 222 | 108 | 167 | 78 | 211 | 85 | 356 | 283 | 190 | 78 | 94 | 420 | 234 | 2,818 |
| Buffing machines | 31 | 22 | 50 | 41 | 58 | 31 | 49 | 37 | 107 | 54 | 65 | 21 | 33 | 154 | 76 | 869 |
| Drills (portable electric) | 64 | 38 | 105 | 62 | 107 | 56 | 96 | 54 | 212 | 111 | 121 | 46 | 80 | 269 | 138 | 1,657 |
| Screw machines | 2 | 2 | 1 | 4 | 3 | .. | 1 | .. | 3 | 3 | 3 | 3 | 2 | 8 | 12 | 52 |
| Facilities for small parts assembly | 5 | .. | 17 | 11 | 24 | 9 | 27 | 27 | 85 | 53 | 51 | 10 | 11 | 91 | 34 | 483 |
| Mechanics now employed | 183 | 75 | 264 | 162 | 265 | 139 | 1,265 | 137 | 457 | 275 | 222 | 142 | 147 | 577 | 396 | 4,893 |
| Mechanics available | 56 | 62 | 284 | 300 | 167 | 127 | 133 | 313 | 726 | 372 | 342 | 731 | 171 | 967 | 615 | 5,784 |
| Line shafting (length in feet) | 16 | 230 | 329 | 83 | 719 | .. | 49 | 120 | 605 | 328 | 137 | 783 | 110 | 410 | 213 | 4,232 |
| Pulleys | 7 | 7 | 51 | 24 | 189 | 1 | 52 | 9 | 190 | 39 | 49 | 27 | 19 | 106 | 75 | 884 |
| Belts (number of units) | 7 | 6 | 508 | 20 | 4 | 129 | 9 | 88 | 21 | 42 | 11 | 6 | 155 | 76 | 10 | 1,084 |
| Paint spray equipment (units) | 31 | 18 | 46 | 40 | 74 | 28 | 45 | 33 | 115 | 66 | 52 | 22 | 31 | 132 | 86 | 875 |

PRIORITIES

Agar—To conserve supply and direct distribution (M-96).

Air Transportation Facilities—Rating not only applies to all articles physically incorporated into air carriers, but also to essential operational equipment such as tools, ground radios, etc., (P-47 Interpret. No. 1).

Airplanes—Restricts production and sales of light aircraft with less than 500 h. p. and limits the amount of aluminum for use in airframes (L-48). Extension of order for maintenance and operations materials for Pan American Airways (P-41, Amend. No. 1). Replacing 12 previous aircraft orders, allows application of A-1-a rating, on form PD-81-a, to material entering production of aircraft products (P-109).

Alcohol (Distilled Spirits) — Lack of storage space necessitates suspension of paragraph C of order; direct allocation orders not affected (M-69, Suppl. No. 2).

Aluminum—M-1-f supercedes M-1 and M-1-a and establishes complete allocation system. Apply on forms PD-26-a, 40a. Expires December 31, 1942.

Asbestos—M-79, Amend. No. 1 prohibits installation of 85% magnesia or other high temperature pipe covering except as authorized.

Automobiles—L-2-h permits General Motors, Cadillac Division, to complete production of ambulance chassis.

Bridles—M-51, Amend. No. 1 further restricts sole delivery and use.

Burlap—M-47, Amend. No. 3 makes supplies of burlap bags available for bagging wool, peanut seed and seed potatoes.

Canning — M-81 drastically reduces manufacture, sale, delivery and use of tin cans (form PD-269). P-115 facilitates maintenance and repair materials for canning industry.

Canning Machinery and Equipment—P-42 affecting material for production is extended indefinitely under Extension No. 1.

Cellophane—Amend. No. 2 extends order L-20 until March 17, 1942.

Chlorine — Further drastic restrictions on use provided by M-19, as amended. Specific ratings assigned for various uses. Related forms are PD-190, 190a, 277, 278, 191.

Chromium—M-18-a, Amend. No. 2 revokes M-18 as amended and provides strict allocation. Expires June 30, 1942.

Coal and Coke—M-97 revokes inventory restrictions of Priority Regulation No. 1 to permit accumulation of coal and coke (only) inventories by utilities and industrial users.

Cobalt—M-39 as amended provides

allocation system for all forms of cobalt. M-39-b prohibits use in specific items.

Conveyor Machinery—P-78, providing material for production, expired, but producers can obtain assistance under Productions Requirements Plan.

Cooking Appliances—L-23 Amend. No. 1 lifts restrictions on bright work to exhaust present inventories.

Copper—Amend. to M-9-a prohibits sales except on orders with A-10 or higher rating. Interpret. No. 1 to M-9-a (as amended) provides clarification re deliveries of exempt products. P-106 provides for mill repair and maintenance materials; ratings vary and require form PD-258. P-58 Amended, covering South American mines, expedites delivery of increased amount of material.

Corundum—M-89 provides allocation directing deliveries. Forms PD-293, 294 required.

Cotton—M-92 restricts sale of SXP cottonseed: rating of B-1 assigned on completing forms PD-287, 288.

Distilled Spirits—M-69, Suppl. No. 3 prohibits distilleries from producing spirits for beverages.

Fats and Oils—L-40 restricts use of vitamin A for manufacture of multi-vitamin tablets.

Feathers—M-102 restricts sale and delivery except on orders with A-1-j or higher rating.

Fire Fighting Apparatus—L-39 contains specific list in which scarce materials may be used. P-108 provides material for production of fire fighting apparatus: ratings vary and require filing forms PD-81, 81a, 82. L-43 prevents unnecessary consumption of scarce materials in production of motorized fire apparatus.

Freight Car Construction — A-3 rating is applicable only to materials physically incorporated in the product according to P-8, Interpret. No. 1.

Gas (Natural) — L-31 curtails consumption. With exception of 17 states, order only applies in event of shortage.

Graphite (Madagascar Flake)—M-61 curtails use by requiring flake graphite of crucible quality be used for making crucibles and prohibits use of graphite for crucibles unless authorized by WPB. Use forms PD-1-a, 303-a, 303-b.

Health Supplies Rating Plan—P-29, Amend. No. 2 provides simplification of procedure.

Hemp—M-84 conserves supply and directs distribution of Agave fiber: processors notified they may process 100% for February, not 80% as previously mentioned. M-36, amend. No. 3 further restricts processing and monthly sales of Manila fiber and cordage.

Kapok—M-85 conserves supply and directs distribution.

Lamps (Incandescent) — L-28 curtails use of nickel, brass and copper in making non-essential lamps.

Lead—M-38-e establishes February quotas.

Light Trucks — L-3, Amend. No. 1 defines light trucks as "those having a maximum gross vehicle weight rating of 9,000 lbs. or less." L-3-e, Amend. No. 4 further extends sale ban.

Locomotives — A-3 rating applicable only to materials physically incorporated in product according to P-20 interpret. No. 1 and P-21 interpret. No. 1.

Maintenance and Repair — P-100 as amended gives priority assistance for agricultural machinery maintenance and repairs but restricts critical materials use under P-100 interpret. No. 1.

Molasses—M-54 interpretation except Puerto Rico and Virgin Island rum makers and permits them to make rum at rate of 90% of 1941 output.

Motor Carriers—L-1-a, amend. No. 2 modifies order establishing February quotas by allowing manufacturers to carry over to March the unused portion of quota. L-1-c, amend. No. 4 extends sale ban which is further extended by L-1-e, amend. No. 5. L-1-c, amend. No. 6 lifts restrictions on fire apparatus if it has A-10 or higher rating. L-1-d clarifies inventory forms R-204, 205, 206, 207 to be filed by manufacturers, dealers and finance companies.

Musical Instruments — L-37 restricts production and sets ratio of use for critical materials used.

Oil (Tung) — M-57, amend. No. 1 extends order to April 15, 1942.

Petroleum—M-68-1 permits drilling of new wells in specified areas. M-68, M-68-e Interpret. No. 1 provides application of conservation provisions to deliveries on same basis for foreign countries as well as U. S. and possessions. "Lease equipment" is covered by Interpret. No. 2 of M-68 as amended. M-68, amend. No. 3 clarifies provisions regarding "well spacing." Interpret. No. 1 of P-98 states order applies only to deliveries within U. S. possessions and territories. P-98, amend. No. 1 permits use of A-8 or lower rating without counter signature for operating supplies under \$500. P-103-a provides material for operation of Standard Oil Co. of N. J., refineries. P-103-a, amend. No. 1 exempts purchasers from provisions of M-68 series but stipulates use of materials.

Plumbing and Heating — L-42, Sched. No. 2 is simplification covering grey cast iron, malleable iron, and brass and bronze pipe fittings.

Pulp — M-5, amend. No. 3 adds to February sulphite wood pulp allocation schedule for nitration purposes, a schedule for February-March Lend Lease requirements.

Radio Sodes—P-38, amend. No. 1 assigns A-1-d rating to all materials used in production.

(Continued on page 56)

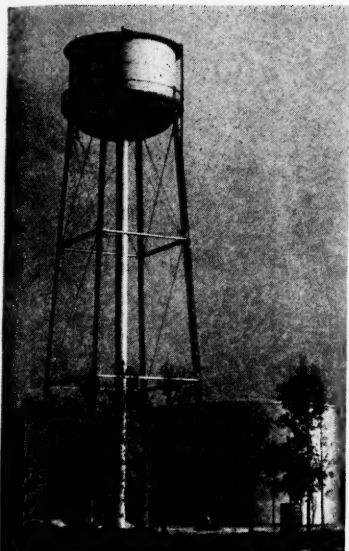
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The Chicago Bridge & Iron Company has recently completed two 1,000,000 gallon standpipes, one 100,000 gallon elevated tank measuring 100 feet to the bottom, and one 500,000 gallon elevated tank 123 feet 1 inch to the bottom at Camp Blanding near Starke, Florida. The accompanying photograph shows the 100,000 gallon elevated tank, and one of the 1,000,000 gallon standpipes which is 65 feet 6 inches in diameter by 40 feet high.

Three New Plants in South to Convert Tin Cans Into Copper

Plans have been announced for the construction of three plants in the South, where used tin cans will be prepared for a leaching process in the precipitation of copper from mines. The Defense Plant Corporation has allocated approximately \$175,000 for construction of the plants in the vicinity of Dallas and Houston, Texas, and Kansas City, Missouri.

The process whereby the cans are actually converted into copper is not new and has no bearing on detinning of cans for the reclamation of tin and steel.

The new plants, which are expected to be ready for operation by the middle of the coming summer, will clean and shred the tin cans, after which the metal will be shipped to copper mines. There mine waters, containing copper sulphate, flowing over the shredded metal, producing copper equal in amount to the quantity of metal used. It is estimated that the mines using the processed cans will produce approximately 2,000 tons of copper per month.

CORRECTION

In the War Production Board chart published on page 36 of the February MANUFACTURERS RECORD, the Bureau of Priorities was placed as being under the jurisdiction of the Labor Division. This was an error for the Bureau of Priorities, like the newly established Bureau of Industry Branches of which Philip D. Reed, Chairman of the Board of General Electric, is in charge, actually is under the Division of Industry Operations.

East Tennessee Manganese Resources

A report on "The Manganese Resources of East Tennessee," by Stanley O. Reichert, has just been released by the Tennessee Division of Geology. This new publication comprehensively covers both the geology of ore occurrence and current mining activities in the area. A total of more than 140 mines or prospects are described.

East Tennessee, according to the report, is one of the chief producers of this vital war-time mineral; in 1940, this area had the largest output of ferro-grade manganese in the United States.

For copies of this new Bulletin 50, write W. F. Pond, State Geologist, Room G-5 State Office Building, Nashville. The price is 25 cents.

B & O Railroad Orders \$9,500,000 of Equipment

The Baltimore and Ohio Railroad has placed orders for new equipment representing an expenditure of more than \$9,500,000. Of this amount, \$6,000,000 will be spent for 2000 freight cars, 1000 of which will be fifty-ton steel hoppers to be built by Bethlehem Steel Co. and 1000 fifty-ton steel box cars to be built by General American Transportation Corp.

Also included in the expenditure are eight Diesel-electric locomotives already ordered from Electro-Motive Division of General Motors Corp., six of which are freight locomotives and will be the first to be put into service on the B & O or any other eastern railroad. Each will consist of four units of 1,350 H.P. each.

Transporting Explosives

A speedy motorized vehicle which rolls on rubber tires on the highway or railroad track, is being used by Uncle Sam to eliminate some of the hazards in the movement of explosives at arsenals and powder depots.

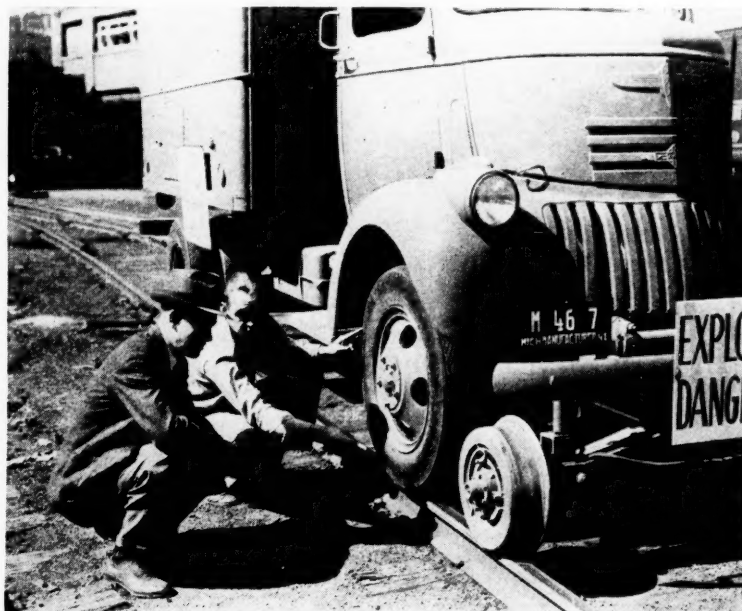
Called the "Auto-Railer," the vehicle employs special rubber tires which work in conjunction with conventional flanged guide wheels for operation on railroad tracks. Tests have shown that the rubber tires have six times greater tractive power than the steel rail wheels alone.

Designed and manufactured by the Evans Products Company, Detroit, Mich., with tires developed by the B. F. Goodrich Co., Akron, Ohio, the Auto-Railer has a top speed forward or reverse of 60 miles an hour, either on highway or rail.

The transition from highway to rail takes but a few seconds. The rail assembly is operated by a hydraulic ram, controlled from the driver's seat, which lowers or raises the flanged steel guide wheels. On the rails, the rubber tires bear a portion of the load normally carried entirely by the flanged rail wheels.

Weighing 8,750 pounds, and capable of carrying 3,000 pounds of explosives, the vehicle is completely spark-proofed, with exterior wiring throughout, while the cushioning properties of the rubber tires eliminate jolts and jars.

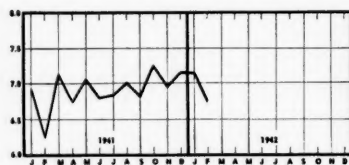
Several of the vehicles are already in use at one of the Ordnance Department's bomb and shell loading plants and other units are in manufacture for use in similar arsenals throughout the country.



Industrial Production Trends

Industrial production, as recorded on the 1935-1939=100 adjusted index, stood at 167, according to preliminary reports for February. This is a decline of three points from the 170 for January. Compared with February, 1941, there has been a rise of 26 points which may be revised upward when complete returns are available.

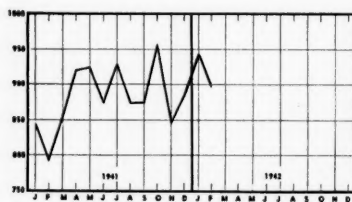
Steel production in February is estimated to have totaled 6,750,000 tons. Though this represents a decline in



STEEL INGOT PRODUCTION
(Millions short tons)

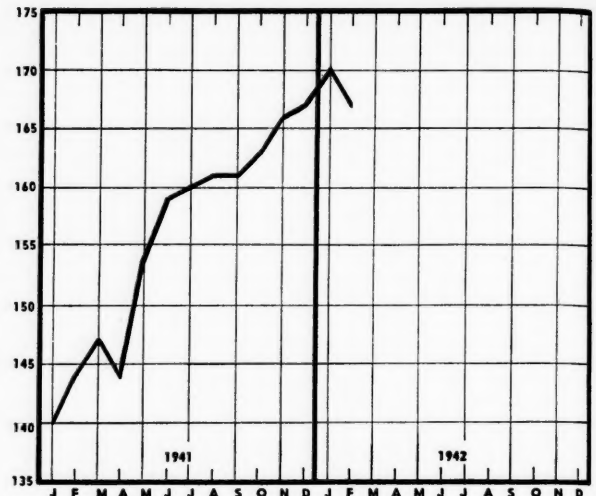
total production from the 7,129,351-ton January output, the daily average production increased. The January rate of capacity amounting to 94.7% increased to an estimated 96.9% in February.

Cotton consumption, which in January reached the second highest point on record with 945,909 bales, declined to an estimated 898,000 bales in February. Again however it should be noted that the decreased total production reflects



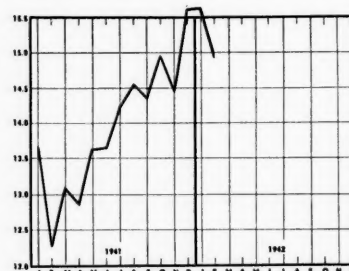
COTTON CONSUMPTION
(Thousands of bales)

only the shorter month and not the daily output. Domestic mill activity was at record levels throughout February and it is expected to increase consumption as production of heavier goods and mill machinery is driven to maximum capacity in March.



INDUSTRIAL PRODUCTION
(Adjusted Index 1935-39=100)

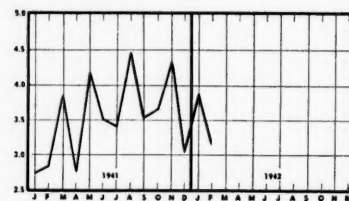
Electric power production, according to preliminary returns, amounted to 14,950 million kw. hours in February and compared with 15,051 million kw. hours in January. Though the introduction of war time may effect a certain saving of power, it will not offset the increased consumption necessitated by accelerated industrial production and of expanded plants for war materials.



ELECTRIC POWER PRODUCTION
(Billions kilowatt hours)

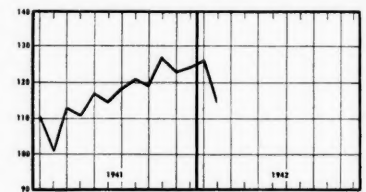
Carloadings declined much less than seasonally during February to 3,153,023 from the January figure of 3,858,000. This less than usual decline can be interpreted as an indication of the burden to be placed on the railroads in the months ahead.

Crude petroleum production official statistics have not been released since



CARLOADINGS
(Millions)

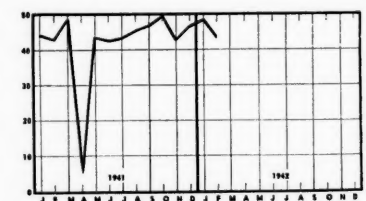
those for November, 1941, but, according to available information, production in February totaled approximately 115 million barrels which, though the low-



CRUDE PETROLEUM PRODUCTION
(Millions of barrels)

est point for many months, is still well above the figure for February, 1941.

Bituminous coal production, according to available returns, totaled 43,720,000 tons in February or nearly five million tons below the 48,540,000 ton January total. Again, a decline in aggregate output does not reflect the continuing

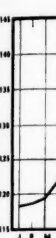


BITUMINOUS COAL PRODUCTION
(Millions of tons)

high daily production which will be manifest in the March figure.

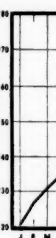
Factory employment, which in January dropped to 132.5 on the 1923-1925=100 adjusted index, rose again in February, according to preliminary returns, to 135.3. The January decline, largely the result of production being stopped

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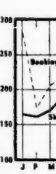


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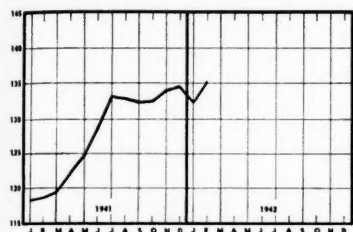
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by government order in certain commodities, was already being liquidated as available labor was absorbed in new or expanded war production plants. While there is bound to be some fluctuation during the ensuing months, on the whole factory employment will steadily increase.

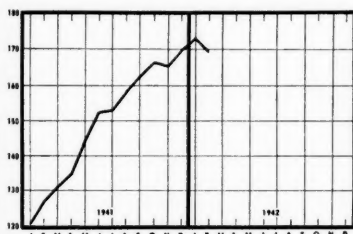
Payrolls, as recorded on the 1923-1925=100 index, stood at 169 in February.



FACTORY EMPLOYMENT
(Adjusted index, 1923-25=100)

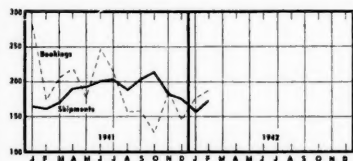
ary, according to early returns, and represents a greater than seasonal decline from the January figure of 173.2. It may be revised upward however when complete returns are in. The January figure was 43.5 points above the corresponding figure for January, 1941.

Structural steel bookings, which maintained an average position of 176,625 tons in January, jumped to an estimated 187,000 tons in the shorter month of February, largely under the impetus of awards for new war production plants. Meantime, shipments, which

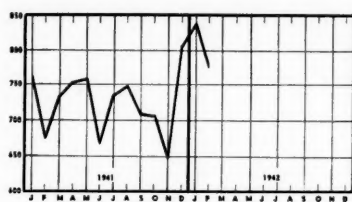


FACTORY PAYROLLS
(Index, 1923-25=100)

were down to the lowest point in more than a year in January with 157,986 tons, increased it is believed to 172,000 tons in February. Regardless of the present low point of structural steel, a



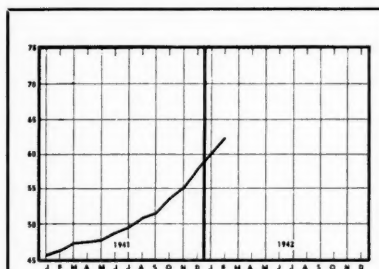
STRUCTURAL STEEL
(Thousands of tons)



SOUTHERN PINE PRODUCTION
(Million board feet)

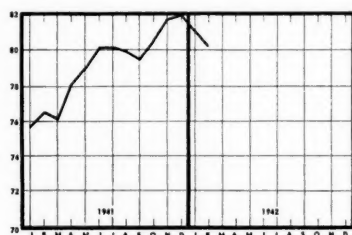
large increase is expected during the next few months.

Southern pine production declined during the short month of February to 778 million board feet from the record high of 839 million board feet in January. The backlog of orders for military requirements however assures a constant high rate of production for months to come.



FEDERAL PUBLIC DEBT
February 28, 1942
(Billions of Dollars)

Public warehouse space that is occupied has been increasing steadily during the past year to a point where in December 82% of the total space was occupied. With production and supplies of many commodities curtailed, the amount of occupied space is apt to decline as early returns would indicate it



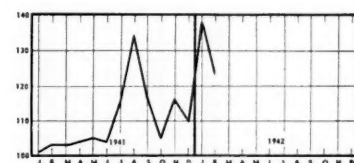
PUBLIC WAREHOUSE SPACE
(% of capacity occupied)

did in both January and February. The latter month is believed to have seen only 80.3% of the total space occupied.

Retail trade, as reflected by department store sales on the 1923-1925=100 adjusted index, stood at 111 in December.

ber. Contrary to expectations and early returns, the January figure jumped to 138, the highest point in years and far exceeding the August, 1941, figure when accelerated purchasing preceded the imposition of federal taxes. In February the decline was much less than seasonal it is believed, with 123.5.

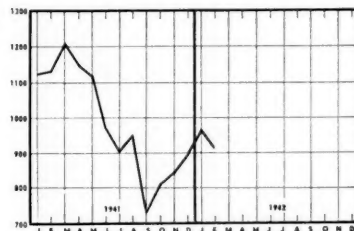
U. S. Treasury bonds, which dropped to 110.7 under the impact of declared war in December, failed to make the



DEPARTMENT STORE SALES
(Adjusted index, 1923-25=100)

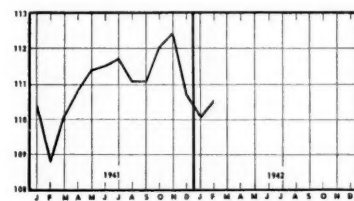
anticipated rally in January and actually dropped to 110.1. A slight improvement was noted in February when the average price per \$100 bond was estimated at 110.5.

Commercial failures, as anticipated, are showing a sharp upturn, the actual number in January being 962 against 898 in December. For the short month of February the total is believed to be 915. It should be noted however that, while the number is increasing presum-



COMMERCIAL FAILURES
(Total number)

ably among small businesses, the total liabilities are inclined to decrease the total for January by \$9,916,000 against \$13,469,000 in December. The February figure is expected to be lower than that for January.



U. S. TREASURY BONDS
(Average price per \$100 bond)

Important New Industrial Plants and Expansions in the South During February

ALABAMA

BIRMINGHAM—oil storage—Shell Petroleum Corp., 900 N. 28th St., erect oil storage plant; cost \$125,000; C. D. Farries, Engr.; superstructure by owner.

MOBILE—dry docks—Doullut & Ewin, Mobile, has contract for addition to Alabama Dry Docks.

ARKANSAS

Gas extraction plant—Girdler Corp., 224 E. Broadway, Louisville, Ky. and Fluor Corp., The Ltd. McBirney Bldg., Tulsa, Okla., will be contractors on construction of gas sweetening plant to be erected on grounds of desulfurizing plant of McKemie Gas Cleaning Co., P. O. Box 208, Magnolia, Ark.; plant site has been prepared, road and drainage facilities also the switch have been completed at plant site.

FLORIDA

MIAMI—shop and warehouse—Rodney Miller, 4220 Ponce de Leon Blvd., Coral Gables, has contract for \$25,000 shop and warehouse, 615 S.W. Second Ave., Miami, for Miami Shipbuilding Co.; Jorgensen & Schreffler, Engrs., 12th Floor News Tower, Miami.

MIAMI—office, etc.—Southeastern Natural Gas Co., F. W. Warner, Jr., Pres., 449 W. Flagler St., let contract to A. J. Miles, 1700 S.W. 12th Ave., for office and sales building, W. Flagler St.; 1-story; 40 x 60 ft.; concrete brick and stucco; built-up roof; Alex Lewis, Archt., 1101 Lincoln Rd. Bldg., Miami Beach.

LAKE WALES—addition—Florida Citrus Canners Cooperative started work on installation of new concentrate plant to include construction of 3 additional units comprising fruit bins and handling equipment, cold storage and shipping warehouse and addition to present feed mill buildings; work by company's forces.

GEORGIA

HOGANSVILLE—mill—Batson-Cook Co., West Point, Ga., has contract for mill unit for U. S. Rubber Co., Akron, Ohio.

PALMETTO—addition—J. F. Pate Construction Co., Newnan, has contract at \$20,000 for addition to Palmetto Mills; Robert & Co., Engrs., Bona Allen Bldg., Atlanta.

SAVANNAH—cars—Central of Georgia placed order with American Car & Foundry Co., 30 Church St., New York, for 100 box cars.

KENTUCKY

ASHLAND—blast furnace—American Rolling Mill Co., Middleton, Ohio, let contract to Blaw-Knox Co., Blaw-Knox, Pa., for dry blast unit for increasing output of pig iron from new 1000-ton blast furnace now being erected.

LOUISVILLE—addition—Batson-Cook Co., West Point, Ga., has contract at \$2,750,000 for constructing additional unit to new synthetic rubber plant on Bells Lane near Ohio River for B. F. Goodrich Co.; Albert Kahn, Archts.-Engrs., Detroit, Mich.

LOUISIANA

BOGALUSA—turbo-generator—Gaylord Container Corp., installing a turbo-generator for the No. 7 paper machine now practically set up; generator is being assembled and installed under supervision of J. H. Jenkins, of Atlanta, Ga.

JENNINGS—plant—T. Miller & Sons, Lake Charles, has contract for \$27,000 plant for Seven-Up Bottling Co.; 2-story; reinforced concrete; brick walls; cast stone trimmings; terrazzo floors.

NEW ORLEANS—addition—George J. Glover Co., Whitney Bldg., has contract for erection of 1-story; brick; L-shaped building addition to Lane Cotton Mill Co.'s plant; 160 ft. of Tchoupitoulas St. by depth of 290 ft.; Favrot & Reed, Archts., Nola Bldg.

Contracts Awarded

MARYLAND

Expansion—Cresapeake & Potomac Telephone Co., Baltimore, plans \$237,000 expenditure for plant and equipment; of this amount \$137,000 will be for new cable facilities in Essex and Curtis Bay areas; a total of \$41,000 will be spent for telephone repeaters on new Baltimore-Washington cables; 3 private branch exchanges will cost \$50,000.

BALTIMORE—building—Davis Construction Co., 9 W. Chase St., has contract for manufacturing building, 2535 Hudson St. for American Can Co.; 1-story; masonry; 70x100 ft.; cost \$17,000.

BALTIMORE—service buildings—Morrow Brothers, Fidelity Bldg., has contract for service buildings, Nos. 1 and 2, Bush and Hamburg Sts. for American Hammered Piston Ring Co.

BALTIMORE—addition—George S. Awalt & Co., 501 Morris Bldg., has contract for \$80,000 addition to building, 1700 Ridgely St. for Charles T. Brandt, Inc.; Lucius H. White, Jr., Archt., 10 W. Chase St.

BALTIMORE—building—Leimbach & Williams, Inc., 30 W. Biddle St., has contract for \$125,000 building, 3811 Dillon St., for National Brewing Co.; 1-story; brick; 221x24 ft.; J. O. Chertkof, Engr., 207 W. Franklin St.

BALTIMORE—alkylation plant—Standard Oil Co. of New Jersey, erect \$800,000 alkylation plant, Boston St.; owner builds.

SPARROWS POINT—pumping station—Tuller Construction Co., Red Bank, New Jersey, has contract for pumping station for Bethlehem Steel Co.; Abel Wolman, Whitman, Requaard & Smith, 1304 St. Paul St., Engrs., Baltimore.

MISSISSIPPI

GREENVILLE—addition—Southern Bell Telephone & Telegraph Co., Atlanta, Ga., has work under way on offices and plant services in building west of present structure on Washington Ave. between Poplar and Walnut; work under supervision of Mason Perry of Jackson, Supt. of Maintenance for company.

HATTIESBURG—plant—Mississippi Power Co., Gulfport, is having the 20,000 KW Eaton plant designed and specifications prepared by Commonwealth & Southern Corp., Birmingham, Ala.; work in direct charge of H. J. Scholz.

MISSOURI

ST. LOUIS—buildings—Rinehart Construction Co., 4030 Chouteau Ave. has contract for assembly and shipping buildings, 5005 Daggett St. for American Stove Co., 2001 S. Kingshighway; brick; 1-story; 72x160 and 20x20 ft.; precast concrete slab roof; concrete foundation; cost \$40,000.

NORTH CAROLINA

DURHAM—warehouses—W. E. Baker Construction Co. has contract for 3 tobacco storage sheds with a combined capacity of 7500 hogsheds for Lucky Strike warehouses, American Suppliers, Inc., owners; estimated cost \$90,000.

ENKA—extension—American Enka Corp., has under construction second extension to twister building; steel and reinforced concrete; 1-story; 82x200 ft.; built-up brick roof; Merchants Construction Co., 290 Baltimore Ave., Asheville, Gen. Contr.; Reed & Abco, Inc., Fairview Rd., has contract for concrete; W. H. Arthur & Co., 225 Patton Ave., roofing; Dave Steel Co., Roberts St., for steel-reinforcing; H. W. Kindler & Co., 8 Magnolia Ave., plumbing, all Asheville; Moland-Drysdale, Inc., Etowah, brick; Fletcher Lime Co., Fletcher, lime; Kalman Floor Co., 110 E. 42nd St., New York City, floor finish; cost \$42,000.

OKLAHOMA

Plant—Shell Oil Co., Inc., Shell Bldg., St. Louis, Mo., let contract to Frick-Reid Supply Co., 108 N. Trenton St., Tulsa, Okla., for erection of high pressure gasoline plant in Cromwell area of Okfuskee county to serve several fields in the district; cost \$250,000; capacity 30,000 gals. of gasoline and 8,000,000 ft. of gas daily; gathering system is now being built into East Cromwell and East Cromwell areas, may extend to northeast Bearden area later.

SOUTH CAROLINA

NEWBERRY—plant—McDevitt & Street Construction Co., Builders Bldg., Charlotte, N. C., general contractor for milk receiving station on Nance St. for Borden Co. let contract to Southern Engineering Co. for structural steel and miscellaneous iron; building 1-story; 42x72 ft.; cost \$15,000.

TENNESSEE

NASHVILLE—cars—Nashville, Chattanooga & St. Louis Rwy. placed orders for 5 Diesel switching locomotives and 450 new freight cars.

TEXAS

Extension—Southwestern Bell Telephone Co., Houston, started work at Dallas on twin long distance underground telephone cables to be laid from Dallas to San Antonio and from San Antonio to Houston; cost \$4,500,000.

ANSON—cheese plant—C. B. Mallet, Abilene, has contract for cheese plant for Jones County Dairy Cooperative; face tile; 1-story; 50x100 ft.; concrete and tile floors; metal sash; built-up roof; steam heat; W. D. Cantrell, Archt., Anson; Lydick Roofing Co., has contract for roof; Central Texas Iron Works, contract for steel; Elgin Face Tile Co. for tile; American Skylight Co. for skylight; Abilene Builders Supply Co., Abilene, for steel sash and waterproofing; cost \$24,000.

DALLAS—repeater stations—Southwestern Bell Telephone Co., Dallas, let contract to Sam Pieper, Beeville, for long distance underground telephone cable from Dallas to Houston and San Antonio, with 23 brick repeater stations at different points.

EL PASO—addition—R. D. Lowman, 2914 Altura St., has contract at \$18,240, for addition to plant, 2215 Myrtle St. for Borden Co.; Frazer & Benner, Archts., 705 El Paso Natl. Bank Bldg.

HOUSTON—generator—William A. Brunet, Shell Bldg., has contract for foundation for installing of twelve 50 kv-a turbo generators at plant of Consolidated Chemical Co., \$725 Manchester.

HOUSTON—gasoline plant—Crown Central Petroleum Co., Petroleum Bldg., let contract to Andrew Ness, 200 Portwood St. for gasoline plant; masonry and steel; concrete foundation; brick walls; steel sash and doors; built-up roof.

HOUSTON—steam electric station—Houston Lighting & Power Co. is starting construction of a 35,000 kw-high pressure power plant, to be known as West Junction steam electric station, orders for much of equipment placed; other equipment and construction materials will be placed as work proceeds; Ebasco Services Incorporated, 2 Rector St., New York City, supervising work.

HOUSTON—chemical plant—Earl North, erect chemical plant, Travis St. at Webster; steel frame; corrugated iron sheds; cost \$15,000; owner builds.

HOUSTON—office building—Sheffield Steel Corp. let contract to W. S. Bellows Construction Co., Bankers Mortgage Bldg., for \$165,000 office building on south side of Houston Ship Channel; 3-story; brick; masonry and concrete; 180x80 ft.; air conditioned; Kenneth Franzheim, Archt., 2306 Crawford St.

(Continued on page 52)

ESTABLISHED
1905



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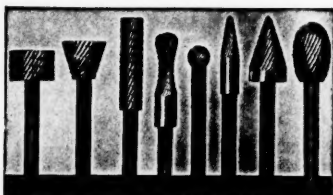
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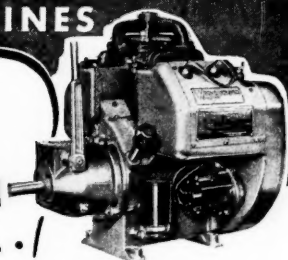
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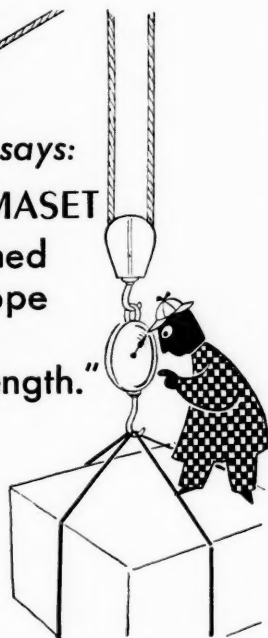
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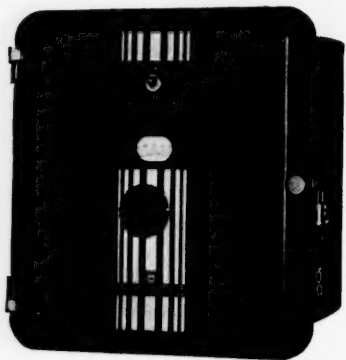
GILMORE WIRE ROPE DIVISION • PITTSBURGH & MUNCY, PA.

MARCH NINETEEN FORTY-TWO

New Methods and Equipment

Signalling Controller Tests Condensate Automatically

Leeds & Northrup Company announce that industrial steam plants may now have, at very low cost, dependable protection against damage caused by contaminated condensate, by using the Leeds & Northrup new signalling controller. Used where indicating and recording of condensate purity is not needed, this simple, automatic equipment tests condensate purity continuously, its self-contained signal lights showing whether condensate is above a specified minimum purity and is safe to use again,



or whether it is below this limit and should be diverted to waste.

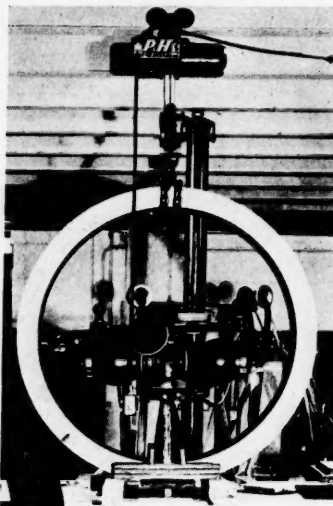
In addition, the instrument can operate external warning bells or lights, or it can provide two-position control by regulating a motor-driven valve in the condensate line to dump impure condensate. If the operator desires to measure condensate resistance, he may do so by turning the instrument's control setting dial until both signal lights are out, and reading the dial scale. A descriptive catalog may be had from the company at 4934 Stenton Avenue, Philadelphia, Pa.

Insulation Tubing for Low Temperatures

A transparent tubing, known as Transflex, with resistance to brittleness down to -50 degrees Centigrade, has been developed by the Fibron Division of Irvington Varnish & Insulator Company, Irvington, N. J. It was made especially to secure continued, effective insulation on aircraft flying at high altitudes, and already has been utilized by Douglas Aircraft and Curtiss-Wright. Its toughness and rubber-like qualities make it useful for a wide variety of other industrial applications, and its transparency permits quick location of wire breaks and ready identification of wires which have been snaked through it.

X-Ray Checks Fitness of P&H Gear Blanks

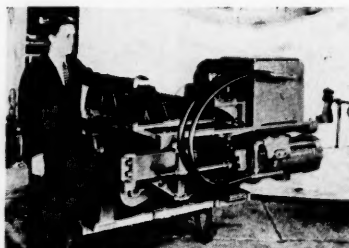
An accompanying illustration shows P&H gear blanks getting a physical check-up before they get their teeth, and no stricter examination could be made than is being made by the all-seeing X-Ray machine that passes on the soundness and uniformity of their weld joints at



the plant of Harnischfeger Corporation, Milwaukee, Wis. A P&H Zip-Lift teams up with the X-Ray apparatus and positions each gear so the weld may be tested by the penetrating rays. If the weld is sound, the gear teeth are cut and machined. Physical unfitness is the only ground for rejection here, and that fault may be promptly remedied when discovered.

Speed Transmission Equipped With Hydraulic Automatic Control

What is declared to be the largest speed transmission to be equipped with hydraulic automatic control was recently built by Reeves Pulley Company, Columbus, Ind., for use on a rotary veneer lathe in a South Carolina plant. Weighing 4300 pounds, the transmission is nearly 9 feet long, 5 feet wide and stands almost 4 feet high, overall. It transmits 26 horsepower



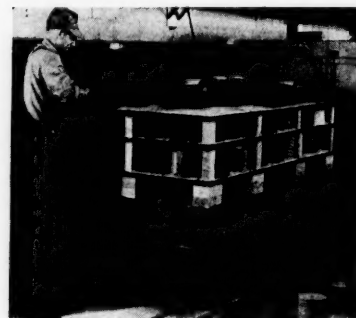
at maximum speed and provides infinitely variable speeds over a speed ratio of 3:1. The purpose of the hydraulic control in this particular installation is to maintain uniformly high peripheral cutting speed on the log from full original diameter down to the smallest diameter at end of the cut. With hydraulic control, peripheral speed is automatically increased as diameter is reduced.

Dri-N-Wet Abrasive Belt Surfacer

Hammond Machinery Builders, Inc., Kalamazoo, Mich., have introduced a new "600" Dri-N-Wet abrasive belt surfacer. The machine can be adjusted from vertical to horizontal while running, while belt tension and tracking device can likewise be adjusted by two conveniently located handles. Totally enclosed for safety, the "600" Dri machine is arranged for individual dust collector or for connection to an exhaust system. The abrasive belt pulleys are made of cast iron and are dynamically balanced. The work table can be adjusted to any desired working angle and is available as bench or floor model. The Hammond "600" Dri-N-Wet machine has all outstanding features of the Hammond "600" Dri plus providing for wet operation for grinding, polishing and surfacing.

Macklin Company Expands

Since the establishment of the company fifteen years ago, expansion has been the oft recurring practice of Macklin Company, Jackson, Mich., manufacturers of grinding wheels. Sensing future national production needs, several months ago Macklin began the construction of an additional building to house a new continuous kiln which will increase produc-



A truckload of grinding wheels just out of the kiln.

tion of vitrified wheels by 30 per cent. From a small beginning, Macklin Company now occupies an important place in the grinding wheel industry, its progression being due to the manufacturing department in producing wheels of uniform quality, the engineering department continually striving to discover the perfect bonding formulas resulting in wheels of longer life and improved cutting qualities, and a well trained and experienced field force.

Process Extends Latex from 50 Per Cent to 300 Per Cent

Developed in the laboratories of the Union Bay State Company, Cambridge, Mass., a new method of processing latex claims that it extends the volume from 50 per cent to 300 per cent and will interest users of latex for cementing, impregnating and coating purposes. After being extended by this process, normal (38 per cent) latex is returned to its owner in the form of a 37 per cent concentration, and concentrated (60 per cent) latex is returned in the form of a 55 per cent concentration. Questions regarding the process' extending possibilities should be addressed to Laboratory E31.



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Neglect is almost as destructive as sabotage. If your water supply system is not in tip top order, call in Layne and have necessary repairing and reconditioning done at once. Materials, except for strictly war work, may not be available later. Maintaining present equipment is real conservation.

If you require more water, arrange for additional wells and pumps without delay. Better call in a Layne engineer. He will cooperate with you in planning your additional water supply so as to use the minimum amount of materials essential to war work, yet give you an adequate, efficient and long lived installation. Layne wells and pumps are designed for your requirements regardless of size. They are noted for their high efficiency and trouble free service. They are serving all types of industries, municipalities both large and small, army and navy needs, training camps, flying fields and munitions plants.

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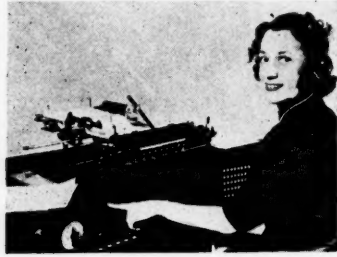
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WORLD'S LARGEST WATER DEVELOPERS

Push-Button Model Auto-Typist

The American Automatic Typewriter Company, Chicago, Ill., announces an automatic typewriter employing push buttons for the selection of form letters, special paragraphs in form letters, and for detailed order writing and billing operations. The machine has two banks of push buttons, one for each of two rolls from which letters or billing entries are transcribed, with 40 stations on each bank. The Auto-typist Push-button



Model is actuated by two perforated paper rolls, similar to music rolls, while the push buttons select desired information from either roll. Rolls are easily changed, making the machine readily available for work above its two-roll operating capacity. Any make of billing typewriter, manual or electric, can be attached to the Push-button Auto-typist for conversion into an automatic order-writing or billing machine, and any type of continuous forms or one-time carbons may be used.

Lyon Steel Work Bench

Because of new and improved accessories, Lyon heavy duty, steel work benches are given a more diversified use. The basic steel bench, illustrated, may be equipped with single drawer, two or three shift drawer units for multiple shift



operations, half depth shelf, full depth shelf, back and end stops, foot rest, or full length bench riser. The channel type stringer is used only when the bench has no shelf. For added strength and rigidity, shelves and stringer are made in one piece.

Offers New and Different Blackout

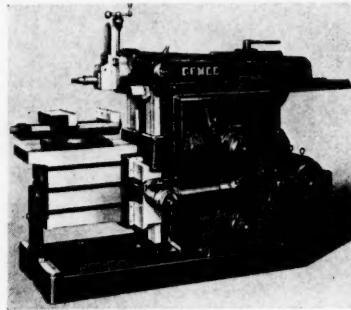
The Skybrite Company, Cleveland, Ohio, has introduced a blackout paint, "with all the advantages and none of the disadvantages," it is declared. Known as Skyco Blackout, the new paint produces complete opacity with one coat; is non-reflective to outside light; withstands weather conditions; dries quickly; is easily applied, and easily removed. It may be sprayed or brushed on and one gallon covers at least 500 square feet. Sash and glass are not damaged by its use.

New Methods and Equipment

GEMCO "Multi-Purpose Shapers"

The General Engineering and Manufacturing Company of St. Louis, Mo., manufacturers of the Kelly Shaper, have announced a new development in the construction of crank shapers. Known as GEMCO "Multi-Purpose Shapers," these new machines are characterized as production machine tools of the "highest order." A governing factor in their development has been an urgent need of American industry for high production tools.

These new machines are described as extremely strong and sturdy, operating at



greatest accuracy and speed, and presenting unusual flexibility of service. Outstanding features of design are: independent power rapid traverse to table, Universal table, built-in circulating force feed lubricating system, spray lubrication for all internal parts, self-cleaning automatic oil filter, important and exclusive safety feature known as "Lubrigard" which permits operation of the shaper, powerful ram with extra large sliding surfaces and bearings, duplex gear ram drive, silent gear drive, Timken roller bearings, simplicity of design and streamline appearance, hardened alloy steel gears and shafts, automatic locking means of stroke and feed mechanisms, centralization of controls, wide range of table feed dials for feed stroke and speed adjustments, etc. The new shapers are available in sizes ranging from 16-inch to 24-inch stroke, and are offered in three types: Plain, Production, and Universal.

Pitch-On-Metal Substitute For Copper Flashing and Galvanized Sheets

After undergoing extensive tests, a substitute material for use in place of sheet copper and other sheet metals has been introduced by Cheney Company, Ardmore, Pa. It is designed for either defense or non-defense construction, as priorities are not necessary. Pitch-On-Metal, which is the name by which the new material is known, is claimed to have the strength of steel and the flexibility of copper. Made with a ferrous metal core, completely en-

closed in a baked-on coal-tar pitch, it is not affected by moisture or cement mortar and is resistant to most acids. It is available in sheet form for counterflashing, gutters, downspouts, gravel stops, termite shields, ducts, etc.

New Model 144 Malldrill

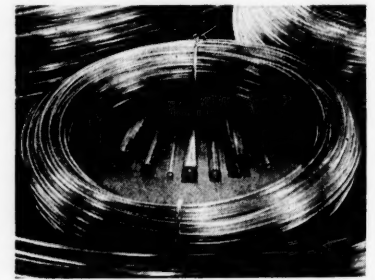
The Mall Tool Company of Chicago announces the new Model 144 Malldrill



which is claimed to have about twice the power of similar drills for production purposes although it is very light in weight. It is powered for high speed drilling, built to stand up under heavy duty operation, and is particularly adapted for use in confined quarters. The overall length is 8½ inches, overall height 7½ inches, net weight without cord 4½ pounds, and no load speed 4,000 r.p.m.

Plastic Seamless Tubing

Declared to be virtually unbreakable and capable of being readily bent or curved to fit almost any condition, transparent Tenite tubing, ranging in sizes from 3/16-inch to 3/4-inch, is now available. This new plastic seamless tubing is extruded in continuous lengths and possesses many advantages not found in



other type tubings. Troublesome weld marks and joints are eliminated in the fabrication, and the ends may easily be adjusted to standard flared fittings with the same tools that are used for copper tubing. Large diameter tubing, with wall thickness of .0625 inch, can be threaded with standard thread-cutting tools. Tenite tubing in sizes up to 1/2-inch in diameter, with wall thickness of .035 inch, is stocked in long length coils, as shown in the accompanying illustration. Tubing over 1/2-inch in diameter is stocked in 12-foot lengths. One-inch diameter tubing is expected to be available soon. Tenite tubing is extruded by Extruded Plastics, Inc., Norwalk, Conn., from a cellulose acetate butyrate formula of Tenite produced by Tennessee Eastman Corp., Kingsport, Tenn. It is distributed by Julius Blum & Co., 532 West 22nd St., New York, N. Y.

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And It's Giving Thousands of SAFE
PULLS and LIFTS
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New Improved Model G Series "Safety-Pull" Ratchet Lever Hoists are built in convertible capacities ranging from $\frac{3}{4}$ to 15 tons, yet they weigh only 14 to 150 pounds. Greatly increased production facilities make it possible to give immediate service. For further information consult your supply house or write for our Catalog No. LG-5.

COFFING HOIST COMPANY

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Danville, Illinois

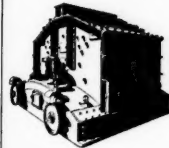
RATCHET LEVER HOISTS SPUR GEARED HOISTS

ELECTRIC HOISTS

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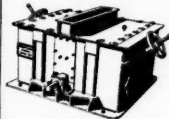
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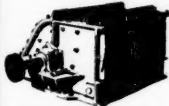
An advanced, new type that reduces by direct impact. For high Silicas, Clinkers, Slags, Chrome and Manganese Ores, Furnace Refractories, etc. Makes "cubing" particle shape, not "slivery". Several sizes. Patented. Bulletin #6000.

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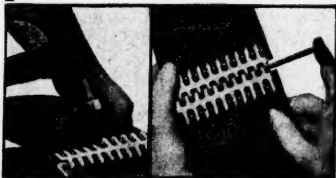
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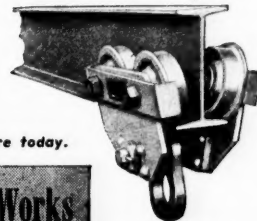
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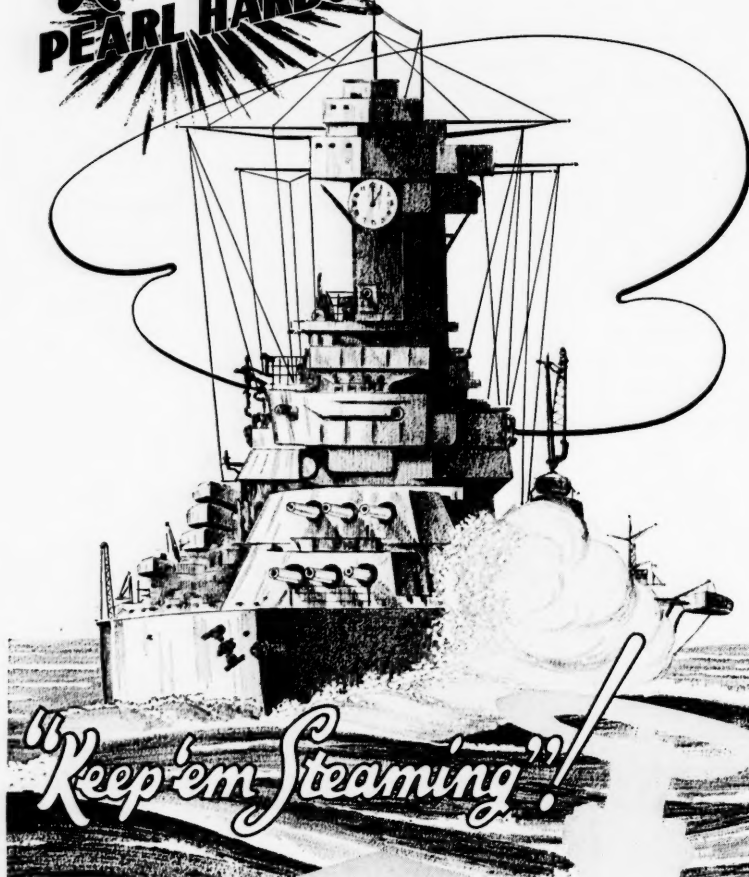
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Industrial News

Penthouse Storage Meets Hotel Emergency

Steelex panels, a product of the Building Sections Dept. of American Rolling Mill Co., Middletown, Ohio, was used recently to construct a steel penthouse on a hotel roof to provide additional storage space. Plans for the Steelex penthouse met all regulations, the roof being carried by structural steel columns and cantilevers. Erection was completed in a week by Leo B. Budde Sheet Metal Works, Inc., of Dayton. The penthouse is 40 by 40 feet, with a 15-foot rise, and cost about \$2,500, including structural steel panels and fireproof doors connecting the main building. Five and one-half tons of Steelex and three and a half tons of structural steel were used.

Young Scientists Asked How They Can Aid War Research

The five Westinghouse Research Fellowship winners this year may be given definite assignments instead of engaging in original investigations of their own choosing, states Dr. E. U. Condon, associate director of the Laboratories. This year all applicants are being asked to indicate the fields in which they feel qualified to contribute to war research if their assistance should be required.

O. W. Burke Company Receives Navy Award

A United States Navy Public Works pennant has been awarded to O. W. Burke Co., Detroit contractors, for its work in constructing a hangar and office building at the naval base. The pennant was presented by the Bureau of Yards and Docks, Lieutenant Commander R. C. Young, commanding officer of the naval reserve aviation base at Grosse Ile making the presentation. The Burke Company has a new contract for additional facilities at the base to cost \$1,500,000.

Pomona Pump Acquires Westco Division

The Pomona Pump Co., Pomona, Calif., announce the purchase of the Westco Pump Division of Micro-Westco, Inc., Bettendorf, Iowa. The newly acquired business will be operated as Pomona Pump Co., Westco Division, at 2621 Locust Street, St. Louis, Mo., the St. Louis plant of Pomona Pump Co. Management and key personnel of Westco will be transferred to St. Louis. In making the announcement, George A. McKenna, President of Pomona Pump Co., said: "The manufacture and distribution of this combined line of pumping equipment greatly extends our coverage in the entire pumping field, particularly in industries having diversified pumping problems."

Caterpillar Tractor Company Report

The Caterpillar Tractor Company, Peoria, Ill., has embodied its annual report for 1941 in an interesting and attractive booklet illustrated in color. Illustrations show "Caterpillar" workers working on those machines and services now being turned out by Caterpillar Tractor Company for defense and war projects.

The report states that the increased intensity of the war program created a heavy demand for the company's products, with the result that it recorded the highest volume of sales in its history in 1941. Sales for the year amounted to \$101,957,986 and net profit to \$7,784,482. These figures compare with sales of \$73,062,514 in 1940 and a net profit of \$7,839,116. Although the 1941 sales were nearly 40 per cent higher than in 1940, net profit shows a decrease, due to a great increase in federal taxes, which amounted to \$9,190,725, as compared with \$4,286,788 in 1940. Cash dividends paid to stockholders on the same \$2.00 per share basis for 1941 as for 1940, amounted to \$3,764,480.

United States Steel Appointments

President Benjamin F. Fairless of the United States Steel Corporation of Delaware recently announced the election of John A. Stephens, director of industrial relations, and Roger M. Blough, general solicitor, as members of the board of directors and the executive committee. They will work directly under Mr. Fairless. Before joining U. S. Steel at the Gary Works of Carnegie-Illinois Steel Corp., in 1934, Mr. Stephens had wide experience in industrial management, while Mr. Blough was formerly engaged in the general practice of law.

Industrial News

D. Norris Benedict Named President of Frick Company

Announcement is made by the Frick Company, Waynesboro, Pa., that D. Norris Benedict has been appointed president, succeeding the late Ezra Frick, who died February 2. Mr. Benedict is the sixth president of this organization, which was established in 1853 and specializes in refrigerating, air conditioning and ice-making equipment and farm and portable sawmill machinery. Mr. Benedict is also president of Knickerbocker Stamping Co., a subsidiary at Parkersburg, W. Va., and is director of Landis Machine Co., of Waynesboro. With its facilities almost entirely turned to government work, Frick Co.'s present schedules call for the largest production in its history.

Towers Succeeds von Phul as President of Ford, Bacon and Davis

Ford, Bacon & Davis, Inc., Engineers, New York, N. Y., announce the election of James F. Towers as President. He succeeds William von Phul, who will continue as Chairman of the Executive Committee.

Born in Rome, Ga., Mr. Towers started as engineer in the Tennessee Coal, Iron and Railroad Company at Birmingham, later being transferred to Illinois Steel Co., at Gary. In 1918 he left U. S. Steel Corp., joining Ford, Bacon & Davis to manage a large chemical operation manufacturing war supplies. Soon after he became vice president and recently has been in charge of operations. He is a director of Ford, Bacon & Davis, Inc., Ford, Bacon & Davis Construction Corp., Overseas Credit Corp., and Allied Products Corp.

Mr. von Phul was born in New Orleans and started as an engineer with Edison Electric Company of New Orleans. In 1905 he joined Ford, Bacon & Davis, became a partner in 1912 and president in 1922.

Changes Name to "INFILCO Incorporated"

The International Filter Company, Chicago, Ill., has changed its corporate name to INFILCO Incorporated, giving the name a broader scope than the original one, since the company's products now include sewage treating equipment as well as equipment of every type and size needed to meet modern requirements of water conditioning. Organized 48 years ago the company's early activities were in the design and development of filters and filter plant equipment. Thirty years ago the company began manufacturing water softeners and other water conditioning equipment, and more than 10 years ago "Inflico," the streamlined abbreviation of the old name, was adopted as a registered trademark, when 60 or 70 per cent of equipment manufactured was already other than filters.

Rust Engineering Building Chimneys and Silos

Contracts covering the design and construction of chimneys and silos, totaling \$648,677, are being executed by The Rust Engineering Company, Pittsburgh, Pa. Groups of perforated radial brick chimneys are being erected for Libby-Owens-Ford Company, at Owens, W. Va.; Westinghouse Electric and Manufacturing Company at Fairmont, W. Va., and for Republic Steel Corporation at Cleveland, Ohio. Single chimneys are being erected for Algoma Steel Company, Ltd., at Sault Ste. Marie, Ontario, Canada; Southland Paper Mills at Lufkin, Tex., and a reinforced concrete chimney at Johnson City, N. Y., for New York State Electric and Gas Corporation.

Chattanooga Boiler and Tank Officers

Following the recent death of I. B. Merriam, President and Treasurer, Chattanooga Boiler and Tank Company, Chattanooga, Tenn., E. C. Patterson has been elected President and Treasurer to succeed him. E. J. Walsh is Vice President, and E. C. Patterson, Jr., Secretary.

G-E Appointment for D. H. Lauder

D. H. Lauder, for the past six years engineer of General Electric's Pittsburgh office, has been appointed assistant to W. M. Denny, assistant manager of the company's Contact Service Department at Schenectady, N. Y., according to F. P. Wilson, manager of the department. A native of Lonaconing, Md., Mr. Lauder joined General Electric after he was graduated from the University of Pittsburgh in 1922.

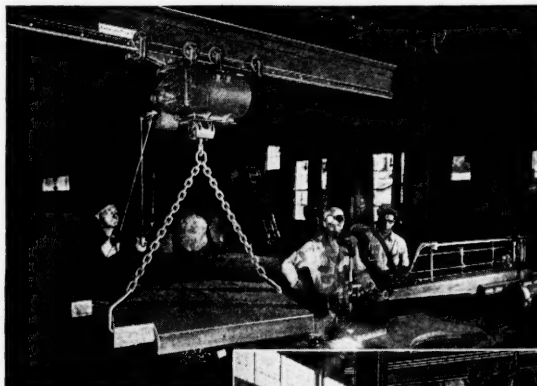
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Trade Literature

SEWAGE AND WATER TREATMENT PLANTS—

Bulletin No. 389—illustrating and describing Rex Slo-Mixers which offer operators of sewage and water treatment plants the advantages of the Langlier Process of Multi-Stage flocculation; publication also presents technical information.
Chain Belt Company, Milwaukee, Wis.

ELECTRIC GAGING EQUIPMENT—

Booklet GES-2543—presents in concise fashion eleven outstanding instances where savings in time and money, as well as improved quality, have resulted from the application of extremely sensitive yet sturdy electric gaging equipment; illustrates such electric gages as the strain gage, pressure gage, film-thickness gage, eccentricity gage, profile gage, electrolimit gages, and the tensiometer, suggesting applications for each.

General Electric Company, Schenectady, N. Y.

GENERAL ELECTRIC LITERATURE—

Bulletin—illustrating and describing G-E Air-Cooled Transformers, 600 Volts and above;
Bulletin—devoted to Coronol, the ozone-resistant cable for high-voltage transmission and distribution;
Bulletin—illustrating and describing Complete Metal Enclosed Switchgear Equipments for power stations;
Bulletin—devoted to the General Electric Ground-Fault Neutralizer.
General Electric Company, Schenectady, N. Y.

"Florida Sports, Recreation and Points of Interest"—In the belief that Florida can best take its place in the current emergency through the medium of its recreational resources, Nathan Mayo, State Commissioner of Agriculture, Tallahassee, has released the 1942 edition of a booklet under the foregoing title. The first half portrays the many sports and recreations to be found in the state, while the second half is the "Point of Interest" section, presenting photographs of places to see and visit from Pensacola to Key West. Copies may be obtained by addressing Mr. Mayo.

"Possible Alternates for Nickel, Chromium and Chromium-Nickel Constructional Alloy Steels"—Issued by the American Iron and Steel Institute, 350 Fifth Avenue, New York City, describes four completely new series of alloy steels "to make the nation's limited reserves of strategic metals go further and help build more guns, tanks, battleships and airplanes." Prepared at the request of the War Production Board's predecessor, the OPM, the series of new steels was developed by a group of metallurgists who devised hitherto untried chemical compositions, melted experimental heats of the new steels, tested them thoroughly and selected those which seemed suitable. Priorities on nickel and chromium, because of insufficient supplies available, made it necessary to develop suitable alternates. The alloy steels include a series of carbon-molybdenum steels, manganese-molybdenum steels, and low chromium-molybdenum and low nickel-chromium-molybdenum steels. Use of alternate steels, the booklet states, may make necessary some changes in established methods of fabrication or heat treatment procedures, or both, or may even make some changes necessary in engineering design of the product affected.

RELATION OF COST TO OUTPUT FOR LEATHER BELT SHOP—

Booklet—Technical Paper No. 2 "The relation of Cost to Output for a Leather Belt Shop," by Joel Dean, with a memorandum on empirical cost studies by C. Reimold Noyes. This paper is the second in a series of technical publications "primarily of interest to economists and statisticians though concerned with questions that have significance for a broader group," according to a preface by Edward S. Mason, chairman, Conference on Price Research. The investigation on which the booklet reports was initiated when Mr. Dean was Carnegie Research Associate at the National Bureau of Economic Research, 1819 Broadway, New York, publishers of the booklet. He also served as executive secretary of the Conference on Price Research. The memorandum prepared by Mr. Noyes, the National Bureau Director representing the American Economic Association, is a discussion of the "problem of cost determination in both its theoretical and empirical aspects and as a stimulus to a reconsideration of traditional cost concepts."

CENTRIFUGAL PUMPS—

Catalog—devoted to Thrustfire Centrifugal Pumps, four, five, six and seven stage, describing the method of effecting dynamic, hydraulic balance—a method which involves no internal or external mechanisms—while troubles from axial thrust are declared to be entirely eliminated; another important feature of Pennsylvania design is that it permits the placement of heavy bolts close to the center line of the pump, thereby preventing springing of the casing, erosion, leakage and loss of capacity.
Pennsylvania Pump & Compressor Company, Easton, Pa.

ILLUMINATED MAGNIFIER—

Folder—4 pages, illustrating and describing the new Magni-Ray, an illuminated magnifier especially developed for close inspection of all parts entering airplane construction; shows the Magni-Ray in use for all types of inspection of riveting, welding, repair and maintenance work, for inspection of small screw machine parts, stampings, spark plugs and other components of airplanes.
George Scherr Co., 128 Lafayette St., New York, N. Y.

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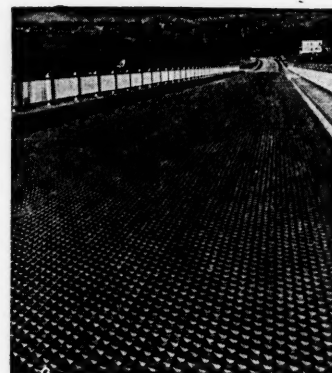
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SOUTHERN NATURAL GAS COMPANY

Watts Building

Birmingham, Ala.

New Plants and Expansions in the South

(Continued from page 42)

HOUSTON—silo—Cowham Engineering Co., has contract for \$100,000 cement silo to be built at Booth's Yard, between Harrisburg Blvd. and Turning Basin, for Trinity Portland Cement Co., 3500 Navigation; 100 ft. high; 71x117 ft. with 8-in. concrete walls on a concrete beam and footing foundation with a concrete slab roof; C. W. Ennis, 2215 Woodhead St. has contract for office and laboratory building addition; R. G. Schneider & Co., Archts., Republic Bldg.

MERKEL—cheese plant—Merkel Cooperative will erect, day labor, force account, locker and cheese plant; Harris & Beeman, of Fort Worth, have contract for refrigeration equipment, vault insulation, vault doors, cold storage room and lockers; David S. Castle, Archt., 1082½ N. First St., Abilene.

TEXAS CITY—chemical plant—Esslinger-Misch Co., 150 E. Columbia, Detroit, Mich., has general contract for overhauling recently acquired building by Monsanto Chemical Co., St. Louis, Mo. for manufacture of a chemical used in synthetic rubber; preliminary work consists of digging test holes for preparing foundation for new construction work required; will utilize steam plant and electric power system of old plant; R. W. Booker, of Boston, Mass. chief engineer in charge for Monsanto Chemical Co.

WICHITA FALLS—addition—Southwestern Bell Telephone Co., C. W. Mier, Engr., Dallas, let contract to Balfanz Construction Co., Abilene, for office building addition and alterations; Charles D. Hughes, 808 Brook St., Wichita Falls has contract for heating and ventilating; Oeschner Electric Co., 809 Brook St. has contract for electric work.

VIRGINIA

RICHMOND—sprinkler system—Century Sprinkler Co., 305 Graham St. has contract for sprinkler system in plant of Philip Morris Co.; Laburnum Construction Corp., 918 E. Main St., Gen. Contr.; Baskerville & Son, Central National Bank Bldg., Archt.

ROANOKE—cars—Norfolk & Western Railway let contract to Ralston Steel Car Co., Columbus, Ohio, for 1000 box cars of 50-ton capacity.

SOUTH

Southern Railway System, Washington, D. C., ordered 2500 all-steel 50-ton capacity hopper coal cars, estimated to cost \$6,500,000 from Pullman Standard Car Manufacturing Co., (Bessemer, Ala., plant).

The Baltimore and Ohio Railroad Co., Roy B. White, Pres., Baltimore, Md., has placed orders for new equipment representing an expenditure of more than \$9,500,000; of this amount \$6,000,000 will be spent for 2000 freight cars, 1000 of which will be 50-ton steel hoppers to be built by the Bethlehem Steel Co. and 1000 50-ton steel box cars to be built by the General American Transportation Corp.; also included in the expenditure are 8 Diesel-electric locomotives ordered some months ago from the Electro-Motive Division of General Motors Corp.; 2 of these will be passenger locomotives and 6 freight locomotives; the passenger locomotives will be 4000 H. P. each, of the standard 2 unit type, and will supplement 13 other passenger locomotives of the same type now in use on the B. & O., they will cost \$339,500 each; the 6 Diesel-electric freight locomotives will be the first to be put into service on the B. & O.; will consist of four units of 1,350 H. P. each or a total of 5400 H. P. per locomotive; the units can also be used in pairs of 2700 H. P. each; these 6 new freight locomotives will cost a total of about \$3,000,000.

Atchison, Topeka & Santa Fe Rwy., New York, let contract to Electro-Motive Co., Cleveland, O. for ten 5400 h.p. Diesel electric freight locomotives and contract to Baldwin locomotive Works, 123 S. Broad St., Philadelphia, Pa., for 20 steam loco-

motives; will let contract later for 100 flat cars.

Atlantic Coast Line Railroad, Wilmington, N. C., let contract to Pullman Standard Car Manufacturing Co. at its Bessemer plant for 1100 box cars, estimated cost \$3,000,000; cars are to be of all-steel, 40-ft. 6-in. long.

Contracts Proposed

ALABAMA

BIRMINGHAM—addition—Fairfield Tin Plate Mill of Tennessee Coal, Iron & Railroad Co., subsidiary of United States Steel Corp., will share in a \$5,500,000 tin plate production development by U. S. Steel Corp.; company is installing 3 electrolytic tin plating production lines and 6 supplemental production lines for chemically treating black plate at various plants; approximately \$1,830,000 will be expended in the Birmingham district; new lines for production of electrolytic tin plate will have a total annual capacity of 225,000 tons.

MOBILE—phosphorus plant—House of Representatives approved construction of a \$4,800,000 phosphorus plant by TVA; under the appropriations bill \$3,000,000 was made available for immediate construction of the plant.

DISTRICT OF COLUMBIA

WASHINGTON—Expansion—Chesapeake & Potomac Telephone Co. plans expending \$1,576,000 for expansion; approximately \$336,000 will be spent for replacing 3 private branch exchange systems of Federal agencies and \$285,000 for additions to equipment in 4 Government systems; \$276,000 for additional central office equipment for Dupont Center; additions to and rearrangements of certain cables in downtown area will require about \$66,000.

GEORGIA

HOGANSVILLE—Asbestos Yarn Plant—United States Rubber Co., Rockefeller Center, New York, will construct plant for exclusive manufacture of improved types of asbestos yarns and fabrics; company purchased the Hogansville plant of Calloway Mills, together with its equipment; double present capacity.

SAVANNAH—Shipyard—Southeastern Shipbuilding Corp., formed by A. W. Clapp, E. H. Webb, and others, all 906 First National Bank Bldg., Atlanta, to take over operation of yards of Savannah Shipyards, Inc.

SAVANNAH—Expansion—Frederic R. Harris, 27 William St., New York, Constl. Engr. preparing specifications and bids will be taken from his office for expansion program of Savannah Machine & Foundry Co., Shipbuilding Division, P. O. Box 500.

KENTUCKY

ASHLAND—Rebuilding—American Rolling Mill Co., R. R. Smith, works manager, will rebuild and modernize jobbing mill department; estimated cost \$1,000,000; main office of company, Middleton, Ohio.

MIDWAY—Warehouse—Park & Tilford Distillers, Inc., erecting a 5-story, metal clad warehouse adjoining its distillery; also constructing a \$125,000, 8-story brick warehouse at 34th and Tyler Sts.

LOUISIANA

NEW ORLEANS—Texas & Pacific Missouri Pacific R. R. may call for bids in 2 weeks for concrete work for foundation and brick wall for constructing engine house and power plant for railroad terminal on Annunciation St.; bids will be taken at same time for concrete work and brick walls for store room and foundation for water tank; Boh Brothers Construction Co. have completed grading work at site.

RUSTON—Clay Plant—Attapulgus Clay Co., C. M. Schaeffer, V. P., 200 S. Broad St., Philadelphia, Pa., plans beginning work soon on \$200,000 clay plant; install modern machinery; W. C. Hudson and J. J. Kane, company engineers.

MARYLAND

SPARROWS POINT—Water Treatment Plant—Bethlehem Steel Co., received bids Feb. 9 for water treatment plant; Whitman, Requaard & Smith, Engrs., 1304 St. Paul St., Baltimore; Consolidated Engineering Co., 20 E. Franklin St., Baltimore, estimating.

SPARROWS POINT—Service Building—Bethlehem Steel Co., received bids Feb. 18 for service building, plate mill department; Morrow Brothers, Fidelity Bldg., Baltimore, estimating.

MISSISSIPPI

GRENADA—Addition—Grenada Industries, Inc., received bids Feb. 24 at City Hall for addition; tile and stucco; 180x180 ft.; includes dye room, air conditioning room, etc.; E. L. Malvaney, Archts., Millsaps Bldg., Jackson.

JACKSON—Box Plant—W. G. Avery Body Works acquired building, Ricks St. off S. Gallatin; convert into box manufacturing plant.

MISSOURI

FREDERICKTOWN—Mine—St. Louis Smelting & Refining Co., Jean McCallum, Mgr., 722 Chestnut St., may reopen and develop old Buckley cobalt mine near here.

SOUTH CAROLINA

Concrete Plant—Dr. W. P. Jacobs of Clinton filing application in interest of establishment of a \$3,000,000 concrete plant in South Carolina and other industrial developments; will probably be located in Webb's Creek area of the Santee in Orangeburg county.

CHARLESTON—Carrier Current Equipment—General Electric Co., Schenectady, N. Y., only bidder for installation of carrier-current system of communications for Santee-Cooper Project; bid was \$24,986.

TENNESSEE

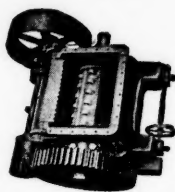
Gas Pipe Line—Tennessee Gas & Transmission Co., Chattanooga Bank Bldg., Chattanooga, filed application with Federal Power Commission asking for certificate of public convenience and necessity to construct and operate a natural gas pipe line from south western Louisiana natural gas fields to Nashville, Chattanooga, Knoxville, and other Tennessee communities and to deliver gas to existing gas pipe line companies for transmission into Ohio and Pennsylvania; newly proposed pipe line will consist of gathering lines to transport natural gas to a point of convenience near Eunice, La.; a main line, 24-in. in diameter to transport gas through States of Louisiana and Mississippi to a point near Muscle Shoals, Ala. and thence to Brace, Lawrence County, Tenn.; from Brace two main lines will converge, one of which, either 16 or 24-in. in diameter will carry gas to a point near Nashville and the other 12½-in. in diameter will carry gas to a point near Alcoa, and Knoxville; contemplate also construction of lateral lines to reach aluminum and chemical plants in Tennessee, certain plants of TVA in Alabama and Tennessee and cities of Nashville, Knoxville and Chattanooga; proposed system will probably have a delivery capacity, without compression, of 155,000,000 cu. ft. per day and with one 5000 h.p. compressor station located 282 miles from beginning of main line, capacity can be increased to 204,000,000 cu. ft. daily; with compressors at intervals of 94 miles, available capacity at Brace, Tenn. can be increased to approximately 300,000,000 cu. ft. daily.

NASHVILLE—Coal Processing Plant—City Smoke Commission, Joe S. Reeves, Chairman, had estimates prepared by Coal Carbonizing Co., 418 Olive St., St. Louis, Mo. for possible erection of coal processing plant to cost approximately \$700,000.

TEXAS

Synthetic Rubber—Texas Defense Industries, Inc., capital \$10,000, main office Fort Worth; incorporated by Fred E. Florence, 1315 Main St., Dallas; Reuben Will Williams, Fort Worth; develop synthetic rubber in Texas.

(Continued on page 59)



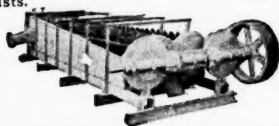
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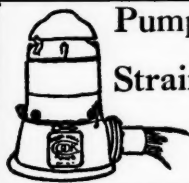
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Turbine

Strainers— and other well supplies

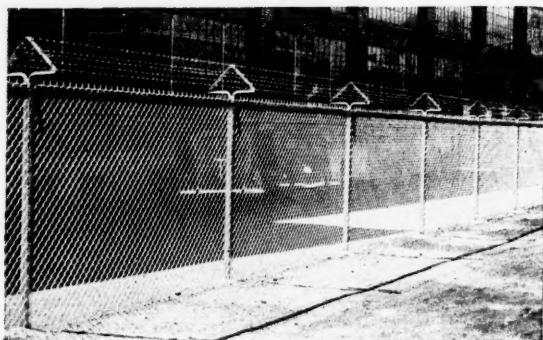
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Stewart
IRON and WIRE
FENCES



MARCH NINETEEN FORTY-TWO

An Industrial "Jeep"

(Continued from page 23)

Automotive Parts: A highway truck load of 10 skid boxes is loaded in 20 minutes by one man with a lift truck moving skids 50 feet from shipping room to truck.

Coiled Steel Wire: One man with an industrial lift truck unloads a 40-ton carload of coiled steel wire in an average time of one hour and 46 minutes.

Dollars, Time, Space and Men Are Saved

Translated into terms of the cost clerk, in one case the installation of a lift truck system has reduced the cost of handling wood pulp to 4¢ per ton. In another field, an average saving of \$7.89 per 40-ton carload has been effected in unloading carloads of coiled steel wire. And since time means money, a sizable saving in loading automotive parts is seen where formerly three men worked 2 days with hand trucks to load a car—a job which takes one man with a lift truck only 3 hours.

Similar economy of space utilization is evident in a steel processing plant where moving and stacking steel tubing with a lift truck has made it possible to handle the same tonnage in $\frac{1}{4}$ less floor space, as well as in warehousing operations where wood pulp and cartons of glass bottles are stacked 25 feet high to increase usable storage space.

Labor-saving is apparent in the warehousing of glass bottles. Here the adoption of a lift truck materials handling system made it possible to transfer eight men to higher paid production jobs. On still another installation in a malleable iron foundry, one lift truck operator and one helper now charge an oven in less than two hours, a saving of twelve man-hours over the former system.

Adaptability To Odd Jobs

Evidence at various plants where a lift truck system of materials handling has been put into operation shows that these trucks are adaptable to a wide range of odd jobs. Two instances of this versatility are found in a malleable iron foundry where a lift truck carries pots of annealed castings to the cleaning machines, dumps out the castings, and carries empty pots back to the filling or packing section; and where the placing and removal of annealing oven doors is simplified because a lift truck picks them up, carries them 40 to 50 feet and sets them securely in place in a freshly charged oven.

What About Upkeep?

Savings effected all along the line in handling materials would mean little if lift truck performance were not as economical as it is effective. Here's what the record reveals: An automotive parts manufacturer using a lift truck reports it in excellent running order after 2½ years of hard use, with original clutch and brake lining still "delivering" efficiently. In that time the head had not even been taken off the motor, and only two sets of tires had been purchased. A malleable iron foundry, using the same make of lift truck reports 14 months of operation without motor overhaul, or without replacement of brakes or clutch. On this latter installation, average fuel consumption of the gasoline powered truck was only 4 gallons per day on an 8-hour schedule. For maintenance, one man devoted five hours per week in inspection, cleaning, lubrication and minor

adjustments.

Remembering that these "upkeep" figures are taken at random from such records as are available, it is only logical that they would be fairly representative of operating performance in any cross-section of industry for this particular make of lift truck. Cost of operating, naturally, will vary with the make of the truck and its ability to keep operating on a 24-hour schedule while delivering efficient load, speed and lifting capacities.

Assembly-Line Ship Production

(Continued from page 19)

from 10 to 15 per cent lighter and much stronger, and gives it sweeter lines than the really ugly Ugly Duckling of 1919, which had 900,000 rivet bumps. Consider the saving of \$45,000 rivets, and 1,790,000 rivet holes for each boat.

Although it requires more skill to put a ship together today than it did 22 years ago, more than 85 per cent of the 2,000 employees at the plant alone started from scratch, when work began last spring. These inlanders—98 per cent native Americans from plantations, steel mills and coal mines—had never seen an ocean-going ship, let alone a shipyard. Classes have taught trades to most of the 8,000 employees at work now. In less than a year, industrial education has made them skilled erectors, fitters, reamers, drillers, welders, riveters, burners, and caulkers. Except for those experienced foremen and leadmen assigned from other shipyards, employees are enlisted at the gate.

World's Longest Underwater Natural Gas Pipeline

(Continued from page 25)

Co., also of that Texas city. Coal tar enamel coating applications were made by Mayes Brothers, of Houston, and the Somastic coating to the Industrial Engineering Co., of Los Angeles, Calif. Joe D. Hughes Co., Houston, did the stringing.

Carbozite Standard Black-Out Black

The Carbozite Corporation of Pittsburgh, Pa., announces a new black-out coating for industrial plant windows and skylights that meets "authoritative specifications and recommended practices and features easy removal when danger no longer exists." Known as Carbozite Standard Black-out Black, the coating is not a paint but a smooth flowing liquid coating manufactured from a pyrobitumen ore, especially refined and mixed with quick drying, volatile solvents and a secret ingredient to provide complete opacity and a gloss-free surface.

Rust Inhibitor for Black Iron

The development of a new organic coating for black iron which can be applied economically at the steel mill is announced by Watson-Standard Company, Pittsburgh, Pa. This new product is of the oxidizing type and is used as a protective coating in place of oil previously used on the metal. It is claimed to provide fine protection against corrosion and serves as a prime coat for all types of synthetic and oleo-resinous coatings.

Southern Field Officers of the Division of Contract Distribution

(Continued from page 34)

Raleigh

R. M. Hanes, Act. Mgr.
c/o State Dept. of Conservation &
Development
New State Office Building

OKLAHOMA

Oklahoma City
W. L. Ducker, Jr., Mgr.
540 Key Building

TENNESSEE

Nashville
W. G. Whitsitt, Mgr.
1014 Stahlman Building

TEXAS

Houston
I. M. Griffin, Mgr.
Ninth Floor Electric Bldg.
1016 Walker Avenue
San Antonio
P. E. Locke, Mgr.
516 Majestic Bldg.
Houston & Navarro Sts.

WEST VIRGINIA

Charleston
E. J. McClees, Mgr.
S. E. cor. Capital & Quarrier Sts.
Huntington
Frank Enslow, Mgr.
309-311 West Virginia Bldg.
Clarksburg
Alex H. Cooper, Mgr.
Empire National Bank Bldg.

New General Electric Developments

Recent developments by General Electric Co., Schenectady, N. Y., are three new motors added to the line of G-E Tri-Clad motors. These motors include a vertical general-purpose polyphase motor, a vertical shielded polyphase motor 1 to 20 h.p., and a vertical shielded single-phase motor 1 to 5 horsepower.

The company also announces a new magnetic relay contractor for use either as a relaying unit or motor starter. The new device, designated CR2790, is especially suitable for control of pilot circuits, as a fractional-horsepower motor starter, or in conjunction with a magnetic switch controlling larger motors, heating or lighting circuits, or signal system.

Air circuit breakers which can be incorporated as an integral part of resistance welding machines by their manufacturers are now available from General Electric and are designated as Types AE-1AY1 and AE-1BY1.

A new line of unit-bearing, shaded pole fan motors for applications requiring a short, quiet, compact motor was recently announced by the company. These G-E motors, available in three models for 115 volt, 60-cycle operation, are especially suitable for use with refrigeration, air conditioning, and ventilating systems.

The "Electric Eye" blackout sentinel developed by General Electric automatically turns off advertising or store window lights when street lights go out.

It is explained that the device has been developed for extinguishing unattended lights during air raid blackouts.

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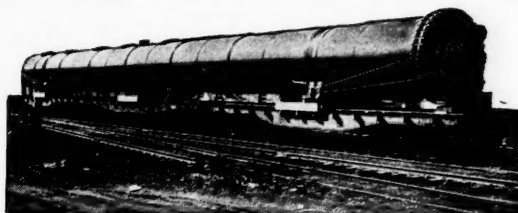
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| Retorts | |

*General Steel Plate Construction
designed for your requirements.*

Lancaster Iron Works Inc.
Lancaster, Pa.

Priorities

(Continued from page 38)

Rayon—Pending revision of M-37-a PD-113, producers are ordered to set aside larger percentage of production during March for hosiery manufacture.

Refrigerators — L-5-b restricts sales and deliveries. L-5-b, interpret. No. 1 exempts those actually in transit at time of order's effectiveness. L-5-c supercedes L-5-a, allows increased production January 15 through April 30 and prohibits production thereafter. L-5-b, interpret. No. 1 covers refrigerators sold, leased or traded before date of original order.

Research—Under Exten. No. 1, P-43 covering research laboratories supplies and equipment is extended to August 31, 1942. P-24, exten. No. 2 extends experimental and research work materials to March 31, 1942.

Replacement Parts—L-4, amend. No. 2 and P-57, amend. No. 3 defines light trucks as "those having a maximum gross vehicle weight rating of 9,000 lbs. or less."

Rubber—M-15-c, amend. No. 7 covers "transfer" of tires. M-15-b-1 contains specifications limiting amount of crude rubber to be used in essential products, M-15-c, amend. No. 4 makes available certain scrap rubber for less essential items. M-46, amend. No. 1 freezes all stocks of chlorinated rubber.

Shotguns — L-55 restricts sale and manufacture of 12-gauge guns and

limits other guns to 50% of average 1940 monthly production.

Silk—Amendment to M-22 as amend., prohibits sales and puts all raw silk under complete control.

Steel—M-21-a, amend. No. 2 conserves scarce alloying elements used in alloy iron and steel, M-21-e (affects tin plate, terne plate and long ternes) incorporates tin and lead orders, further reduces amount of tin for use in cans, and sets up quota system. M-21-f sets up allocation system for shot and bullet core steel. P-68, to expire June 30, 1942, provides maintenance materials for iron and steel industry; use forms PD-148, 81. P-68, amend. No. 1 extends rating to Canadian producers. P-68, amend. No. 2 allows producers to obtain office supplies and operating materials. P-68, exten. No. 1 extends order indefinitely.

Sugar—M-55-b sets receivers quota for March, 1942. M-55, amend. No. 1 permits receivers to buy back sugar. M-98 provides for entire 1942 raw cane sugar supply taken over by WPB. M-98-a establishes allotment for refineries through September 30, 1942.

Tin—M-43-a, amend. No. 1 prohibits jewelers from using tin or tin bearing materials and permits WPB to requisition or purchase their supply on hand.

Tools—E-4 allocates and directs distribution of second-hand machine tools. E-2-a extends order directing distribution of cutting tools indefinitely. P-18-a, exten. No. 2 extends material for

production of cutting tools to July 1, 1942.

Tractors (Track-Laying) — L-53 prohibits sale and directs distribution.

Trucks—L-1-c, amend. No. 5 extends sales ban to February 28, 1942.

Tungsten—M-29-b limits certain users to specific ratios and prohibits use in certain products after May 1, 1942.

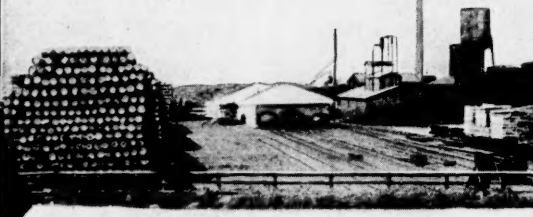
Wool—M-73, amend. No. 1 provides that materials for officers uniforms be classed as defense orders and clarifies restrictions on wool processing: use forms PD-247, 256. M-73 as amended extends to June 5, 1942 and further restricts use of military wool. M-94 supercedes telegraphic order of December 12, 1941, and makes entire shearing supply available for military needs.

Priority Regulation No. 1 (as amended) Interpret. No. 1 clarifies inventory provisions respecting wood pulp.

Priority Regulation No. 3 amend. No. 1 postpones mandatory date of use of PD-3a, PD-1a to March 15, adds Selective Service System to agencies being issued PD-3a, prevents extension of emergency ratings where no emergency exists, and subjects PD-3a preference ratings to any further provisions as may be prescribed by Army & Navy Munitions Board or WPB.

Priority Regulation No. 7 permits use of facsimile signature on purchase order endorsement assigning or extending preference ratings, subject to specified conditions.

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(Continued from page 33)

h.p. with Wagner motor; Kerrick cleaner; Tornado vacuum cleaner; 3 air driven paint hand sanders; 5 spray guns and condensers; 5 spray booth blowers and motors, vapor-proof; 12 ft. Dries & Krump hand brake 14 Ga. capacity; 6 ft. hand brake Dries & Krump 18 Ga. capacity; manually operated square shear 54" 18 Ga. capacity; Buffalo drill press ½ in. capacity; Pettin-gell power hammer direct motor driven; Canady Ohio drill press direct motor driven ¾ in. capacity; two Valley grinders, direct motor driven; threading machine, direct motor driven; steel cutoff saw, motor driven; steel band saw, motor driven; Universal #½ Buffalo combination shear and punch press; Cincinnati 12 ft. shear, electric motor driven, hydraulic hold-downs; Pettin-gell seam roller; rotary bench type shear, manual; 3 Baldor motor driven grinders; Swaine stand punch; handy grinder; glass grinding machine, direct motor driven; 2 Singer sewing machines, electrically driven; Bristol milling machine, motor driven; Fairbanks drill press, ¾ in. capacity; Southbend 8 ft. lathe, motor driven; Curtiss compressor, motor driven 7½ h.p.; Presto motor roller; K. V. A. machine, stationary spot welder; A. C. B. portable spot welder, 75KVA, equipped with one push type gun; Progressive portable spot welder 75 KVA equipped with one push type gun and one electrically operated pinch type gun; Verson 6 ft. press brake, direct motor driven; Verson 12 ft. press brake, direct motor driven; Verson 15 ft. press brake, direct motor driven; 8 ft. Verson combination press brake and punch brake, direct motor driven, all

presses complete with full variety of form dies; Ingersoll Rand air compressor, direct motor driven 30 h.p.; pipe bender 1½ in. seamless tubing capacity; 1 ft. operated rivet press; Cyclone blower 15 h.p. direct motor driven; Hasching sander; Walker Turner rip saw, direct motor driven, 7½ h.p.; Crescent Cross cut and dado head, direct motor driven, 5 h.p.; jointer, direct motor driven 5 h.p.; Crescent rip saw, direct motor driven 7½ h.p.; Hall & Brown band saw, direct motor driven 3½ h.p.; planer Hall & Brown direct motor driven 5 h.p.; boring machine direct motor driven 3½ h.p.; Simplex belt sander, direct motor driven 3½ h.p.; Heath square chisel mortiser, direct motor driven 3½ h.p.; Hall & Brown tenoner, direct motor driven 5 h.p.

0-1. Electrical Manufacturers

One #2 Brown & Sharpe milling machine, with dividing head, all standard and considerable special equipment; #0 Standard Engineering Works, motor driven, high speed hand miller; two 20" Champion single spindle, up-right drill presses; 14" Champion single spindle, high speed drill press; three 12" Craftsman, single spindle bench drills; #4 Bliss punch press; 20-ton hand operated hydraulic press; 16" x 9" Monarch engine lathe, taper attachment, chucks and all standard equipment; 18" x 7" Barnes engine lathe, 2 chucks and standard equipment; 25" x 10" geared head, motor driven sidney lathe, all standard, much special equipment, taper attachment, chucks; 8" x 18"-2½" hollow spindle Lodge & Davis turret lathe, standard and much special equipment; 10" Davis lathe, standard equipment, chucks; Armature Coil Equipment Co., coil winding machine, with several adjustable winding heads; Armature Coil Equipment Co., coil

spreader; ¾" hollow spindle, F. E. Wells & Son Co., hand screw machine; 9" Atlas, bench, engine lathes, 13/16" hollow spindle; variable speed dynamic balancing machine; motor driven commutator undercutting machine; two 100-300 amp. transformer type arc welding machines, complete ox-acetylene welding and cutting equipment; seven wall, stand and hand grinders; three ¼ to 1½-ton Yale chain hoists with 80' of I beam track; 4" beam, Oilwell crane.

A reasonably well-equipped small manufacturing plant producing close—practical—tolerance machined parts, electrical windings and production items.

Vacant ground suitable for expansion: 5 acres immediately joining plant and vacant brick building, 15,000 square feet floor space, on next lot adjoining.

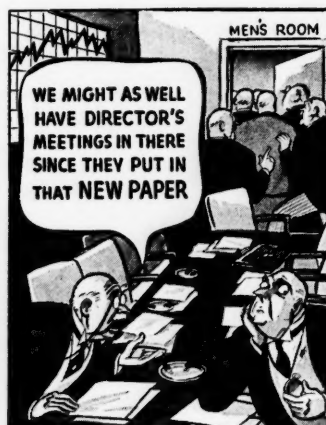
The above company writes:

Editor, MANUFACTURERS RECORD:

We have been doing some sub-contract work since last summer and have some contracts in process now, but are only running one shift and have only part of our equipment working. On a 24-hour basis and with all equipment fully occupied we could be doing three to four times as much as now.

We have handled some rather difficult small pieces during the past seven or eight months and are used to working to a reasonably close tolerance on our own account. At the present time we are working on some small punch and die parts.

Any additional work we might take on we would prefer it being roughing out work, i.e., parts to be hardened and ground. We have handled several such operations very successfully, and prefer this to close tolerance finished work.



Specify

VICTORIA TOILET TISSUES

Single Fold, Double Fold, or Black Core—for high quality at low cost. The Victoria Paper Mills Company, Fulton, New York.

Founded  in 1880



While cosmopolitan in its general appeal, and modern up to this moment in its equipment, there is a peculiar flavor of The Old South here which Southerners are quick to note and appreciate. They feel at home and come back to us again and again.

Rates \$3.00 per day and up. Every room with bath or shower. Centrally located.

The Southern Hotel

BALTIMORE

3000 Rooms in the South

Size means little to service, but twenty-five years in pleasing customers in Southern hotels, plus size, guarantees your satisfaction in these hotels.

Dinkler Hotels

CARLING DINKLER, President

Operating

| | |
|---------------------------------------|--------------------------------------|
| The Ansley, Atlanta, Ga. | The Andrew Jackson, Nashville, Tenn. |
| The Jefferson Davis, Montgomery, Ala. | |
| The St. Charles, New Orleans, La. | The Savannah, Savannah, Ga. |
| The O. Henry, Greensboro, N. C. | The Tutwiler, Birmingham, Ala. |

Year-Round Pasturing

(Continued from page 27)

Experience showed that this program could be made successful through the use of annual crops.

It was recognized, of course, that there are many desirable perennials, but it was found that they could be profitably used in a continuous grazing program only to a limited extent because their maximum periods of growth range from three to, at best, six months, which meant that the land must be left idle the balance of the year.

Sowing a top crop like Manganese or Crimson Clover on perennials seems, Mr. MacRae says, to be the answer, and he adds that under certain circumstances, and on reserved fields, such perennials as Kudzu, alfalfa, and Lespedeza Sericea can be used to advantage.

A twelve months' grazing program, which Mr. MacRae declares and State records show will reduce milk production costs by one-half, and is also good for beef cattle, is as follows. From two to four crops, it should be noted, occupy the same acreage during the year and mature in series.

CROPS WHICH GO TOGETHER ADVANTAGEOUSLY

1. Lespedeza, Crimson Clover following; also Red Clover, as an annual; Giant White Dutch Clover.

2. Soy Beans planted March and April, with parallel rows of Sudan Grass planted when Soy Beans are 3" to 4" high. Soy Beans sown in March and April can advantageously be intersown in July and August with Bearded Barley, Sudan Grass, Crimson Clover, Red Clover, and Willamette Vetch and should be immediately cultivated after sowing these, this being the last cultivation.

3. Soy Beans are again planted without Sudan Grass between June 15 and July 15 for grazing or silage.

4. Bearded Barley sown July-August with Bur Clover, Red and Crimson Clovers, Sudan Grass, and Willamette Vetch.

5. Johnson Grass with Bur Clover, or with Lespedeza and Crimson Clover, or with Willamette Vetch.

6. Manganese Clover with Crabgrass, Johnson, or any other grass.

DATES OF USEFULNESS OF CROPS
LESPEDeza—Summer and early fall.

MANGANESE BUR CLOVER—Fall, winter, early spring.

SOUTHERN BUR CLOVER—Winter and spring.

CRIMSON CLOVER—Winter and spring.

RED CLOVER—Late winter and late spring.

GIANT WHITE DUTCH CLOVER—Spring and early summer.

SOY BEANS—Spring (June) and summer.

SUDAN GRASS—Spring and summer, or sown in June, July—summer and early fall.

JOHNSON GRASS—Spring, summer, early fall.

BEARDED BARLEY—Late fall, winter, early spring.

WILLAMETTE VETCH—Spring.

Already a number of dairy and livestock producers in eastern North Carolina have adopted this program in whole or in part. It is no longer an uncommon sight to see cows on clover in January, February and March, on fields of bearded barley, rye or wheat.

As Hugh MacRae has so often declared, "The South will come into its own when its fields are green in winter."

New Plants and Expansions in the South

(Continued from page 52)

ORANGE—Docks, etc.—Consolidated Steel Corp., R. B. Gillette, Jr., Engr., will construct 2 ship outfitting docks and 1000 ft. of ship building ways; 3 areas on the Sabine river where the construction is planned will be dredged to a depth of minus 20 ft.; application filed at office of U. S. Engineers, Galveston.

TEXAS CITY—Expansion—Carbide & Carbon Chemical Corp., New York, plans additional construction; \$14,500,000 project

nearing completion.

TEXAS CITY—Expansion—Southwestern Sugar & Molasses Co., will move its main office from Corpus Christi to Texas City; will probably enlarge storage capacity at Texas City; A. I. Kaplan, local manager.

VIRGINIA

Expansion—Directors of Chesapeake & Potomac Telephone Co. of Virginia, Richmond, authorized expenditure of \$1,140,000 for telephone plants and equipment in Virginia; project includes additional central office equipment at Norfolk, Hampton and Virginia Beach, cost \$112,000; provision of additional toll circuits on Richmond-Staunton and Staunton-Roanoke Routes, \$29,000; Richmond long distance, \$181,000; toll cable from Petersburg to Blackstone, to provide circuits to serve the army camp being established in Blackstone area, cost \$129,000; facilities to care for telephone growth in the South section of Richmond exchange will cost \$89,000, and additional toll circuits between Richmond and Manakin will require \$17,000; additional dial equipment in the Chestnut office in Arlington, including an addition to building, \$423,000.

CHARLOTTESVILLE—Pencil Plant—American Pencil Co., main plant, Hoboken, New Jersey, may establish plant here, already operating and experimental plant at Charlottesville.

SOUTH

Atchison, Topeka & Santa Fe Rwy., New York, authorized purchase of new equipment, costing \$10,000,000; will purchase ten 5400 h.p. Diesel electric freight locomotives and 20 steam locomotives.

United States Steel Corp., Benjamin F. Fairless, Pres., New York, announced that corporation subsidiaries would spend \$5,500,000 for additional electrolytic tin plating production lines and supplemental lines for chemical treating of black plate; plans include 3 new plating lines and 6 lines for treating black plate; new lines for electrolytic tin plate will have a total annual capacity of approximately 225,000 tons.

War Production Board has allocation of \$175,000 for erection of 3 tin reclaiming units in Southwest region by Defense Plant Corp.; no site selected yet for plant at Kansas City, Mo., but sites have been selected at Dallas and Houston; proposed to reclaim the steel as well as the tin.

GRINDING MACHINES

Booklet—"What, Why and How," presenting essential facts about grinding and grinding machines; publication is intended primarily for apprentices, trade and technical school students and the many new operators of grinding machines.
Norton Company, Worcester, Mass.

CONVERSE BRIDGE & STEEL CO.

Chattanooga, Tennessee

Structural Steel for all Industrial Structures,
Buildings and Bridges

LARGE STOCK FOR IMMEDIATE SHIPMENT

CRUSHED STONE

Only highest grades of crushed
LIMESTONE AND GRANITE

Meeting all specifications

CAPACITY—8000 tons daily

Blue Ridge, Va. Pembroke, Va. Pounding Mill, Va.
Boxley, Greenville County, Va.

W. W. BOXLEY & COMPANY

Boxley Building, ROANOKE, VA.

MOUNT AIRY GRANITE



THE NORTH CAROLINA GRANITE CORP'N.

Mount Airy, N. C.

THE GEORGIA MARBLE COMPANY

Producers and Manufacturers of

GEORGIA MARBLE

TATE, GEORGIA

Atlanta · Chicago · Cleveland · Dallas · New York

GLAMORGAN

PIPE & FOUNDRY CO.

LYNCHBURG, VA.

RESALE MACHINERY DEPARTMENT

NO DIAMOND IS "SECOND HAND"

The same diamond is bought and sold many times; yet is never regarded as "second hand" because it continues to perform its function of being beautiful, just as it did when new. Likewise E.C.A. equipment is not regarded as "second hand" because it is RE-BUILT and RE-GUARANTEED to properly perform its functions. Yet it costs far less than new equipment.

CLOSE-OUT OF MACHINE TOOLS

Bolt Threading Machines, 1-Ton Shop Crane, Drill Presses, Post Drills, 20-Ton Press.

Hand Screw Punches, Machinists' Vices, 12 in. Joiner, Power operated Shear.

AIR COMPRESSORS

30—Portable gasoline driven air compressors, all makes, these sizes, 310 ft., 260 ft., 220 ft., 160 ft., and 110 ft.

BINS

4—1—150 ton Blaw Knox bin, 1—35 ton Blaw Knox, 2—30 ton Johnson. All 2 comp. Above with or without weigh batchers.

CRANES, DRAGLINES AND SHOVELS

1—Link Belt, K-55, Ser. No. 1698, 70' boom, 2 yd. bucket, also have 2 yd. shovel attachment.

1—Link Belt, K-48, Ser. No. 1728, 60' boom, 2 yd. bucket.

1—Northwest Model No. 5, Ser. No. 2572, 50' boom with 1 1/2 yd. pull shovel attachment.

1—Link-Belt model K-42, Ser. No. 1265, 45' boom, 1 1/2 yd. bucket, also 1 yd. trench hoe att. or 1 1/2 yd. shovel front.

1—Northwest model 104, Ser. No. 1386, 45' boom, 1 1/2 yd. bucket; with 1 yd. shovel attachment.

2—Erie, gas air, 1 yd. Ser. No. 4365, 9758, with 45' boom and shovel attachment.

1—Osgood Heavy Duty, Ser. No. 2069, 40' boom, 1 yd. bucket and with 2 yd. shovel attachment.

1—Osgood "Commander" 3/4 yd., 30' boom, Ser. No. 2403 with 3/4 yd. bucket.

1—Thew 3/4 yd. Gasoline Shovel with 3/4 yd. shovel front and 40 ft. crane boom. Serial No. 2801.

1—Kochring Model 301, Ser. 544 and 40' boom, 3/4 yd. bucket.

1—P&H Mdl. 206, Ser. No. 1901, 3/4 yd., 40' boom.

1—Byers Bearcat model 27, Ser. No. 5289, 30 boom, 1/2 cl. sw, 3/4 yd. bucket.

1—Erie Steam Crane, 40' boom with or without 3/4 yd. shovel front.

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AIR COMPRESSORS:

Elec.: 676, 1300, 1578, 2200 & 2850 Ft.

Bltd.: 368, 540, 676, 870 & 1300 Ft.

Diesel: 105, 368, 425, 603, 900 & 1300 Ft.

Gasoline: 110, 220, 315, 415 & 500 Ft.

Steam: 150, 368, 540, 1500 & 1968 Ft.

CRUSHERS: Jaw 48x42, 16x9, 18x10, 24x13, 36x15, 30x10, 30x15, 36x24, 36x48

STEEL TANKS: 10,000, 15,000 & 20,000 Gal.

BOILERS: Economic—60, 100 & 125 H.P.

BUCKETS: Clamshell—3 1/2, 1 Yd. & 2 Yd. Cap.

LOCOMOTIVES: Gas and Diesel—4, 6, 8, & 14 ton, 20 ton, 30 ton & 55 ton.

CRANES: Caterpillar—6 ton, 12 ton, 15 ton

CRANES: Locomotive: 15, 20, 25 & 35 ton

HOISTS: Steam—6x8, 7x10, 8 1/2 x 10 & 9 x 12

Electric: 35, 60, 100, 125, & 400 H.P.

Gasoline: 15, 35, 60, 80 & 110 H.P.

MIXERS: Concrete: 10S, 14S, 21S & 26S

DERRICKS: GUY: 5 ton, 7 1/2 ton, 15 ton

Stiff Leg: 8, 10, 15, 25 and 75 ton Cap.

BELT: Conveyor: 14 in., 16 in., 18 in., 24 in., 30 in., 36 in., 40 in., 48 in., 60 in.

IDLERS:—36 in., 30 in., 24 in., 18 in., 16 in. and 14 in.

DRYERS: 42"x24", 5"x35", 60"x30", 69"x60"

HAMMERMILLS: 36x24, 24x18, No. 3, 4 & 6

SCREENS: Vibrating: Hummer 4x5 & 3x5

CARS: Dump: 1 Yd., 1 1/2 Yd., 3 Yd., 12 Yd.

ENGINE: Diesel: 60 H.P. & 100 H.P. F.M.

170 KVA 3 P., 60 C., 2300 V. WORTH-

ING DIESEL UNIT.

SPECIALS

3—4x30x1/2 Dryers or Kilns.

4x8 Robbins D. D. Vib. Screen.

2—1000 GPM Elec. Underwriters Fire Pumps.

17—Steel Storage Tanks 8,000, 10,000, 15,000 and 60,000 Gal. Cap.

1 1/2 Yd. 43-B Bucyrus Erie Diesel Caterpillar Shovel, New 1937.

3—Monaghan Diesel Walker Dragline, 96, 130 and 160' booms, 3, 6, 9 yds. capacity.

3 Pierce 1 1/2 & 3 ton tandem Gas Rollers.

2—1000 ft. cap. Chicago Pneumatic Diesel air compressors. Very fine.

ASPHALT EQUIPMENT

3—1000 gal. Etnyre Mack Distributors, 3/4 ton & 1 ton Pug Mixers

2—Adnum Black Top Pavers

R. C. STANHOPE, INC.

Lincoln Bldg., 60 E. 42nd St., New York

WANT TO BUY

6000 to 12000 feet Portable steel track

30—dump cars

6—10 to 26000 gallon tanks

1 to 1 1/2 yd. Power shovel

24 x 36 jaw Crusher

TIDEWATER EQUIPMENT & MAC'Y CORP.

305 Madison Ave. New York, N. Y.

UNDERWRITERS FIRE PUMPS

Two 750 GPM Two 1000 GPM

Two 1500 GPM

All with Underwriters fittings and label.

EQUITABLE EQUIPMENT CO. INC.

New Orleans, La.

AIR COMPRESSORS

New and remanufactured

All makes and sizes

Write for Bulletins 1000 and 1042

AMERICAN AIR COMPRESSOR CORP.

Dell Ave. & 48th St. North Bergen, N. J.

Modern AIR COMPRESSORS

ALL TYPES AND SIZES

Correctly Rebuilt

Guaranteed

EARL E. KNOX COMPANY

12 WEST 2ND ST. ERIE, PA.

SHOVELS & CRANES

1—Marion Model 362 Diesel shovels, 1 1/2 yd.

Lorain 77 Diesel Shovel, 1 1/2 yd.

Bucyrus Erie 50-B electric shovel, 2 yds.

Osgood Conqueror Shovel, gas, 1 1/2 yd.

Erownhoist Crane, gas, 1 yd.

General 5 1/2 yd. Backhoe-Crane, gas.

Lima 101 crane-shovel-dragline, 1 1/2 yd.

Link-Belt model K, gas crane, 50 ft. boom.

Marion Model 32 steam shovel, 1 1/2 yds.

TRACTORS—TRENCHERS—GRADERS—ROLLERS—ETC.

2—TD-18 International Tractors with bulldozers.

RD6 Caterpillar Tractor with LaPlante Choate bulldozer.

Hais 1 yd. clamshell bucket, rehandling.

Hais 3/4 yd. clamshell bucket, rehandling.

Dragline bucket 2 1/2 yd. Buc. Erie, alloy steel.

2—Euclid Trac-Trucks, bottom dump, 9 yds.

B.S. 10 ton Tandem Roller, gas.

1—Parsons Model 40 trencher, 48"x14".

Model 10 Caterpillar motor patrol grader.

1—29-B-2 McKiernan & Terry pile hammer.

1—27 McKiernan & Terry pile hammer.

2—25 McKiernan & Terry pile hammers.

3—23 McKiernan & Terry pile hammers.

2—Whitcomb 4 1/2 ton gas locos., standard gauge.

2—Vulcan 6 ton gas locos., standard gauge.

1—Whitcomb 3 1/2 ton 24" gauge gas loco.

1—Ingersoll-Rand air compressor, 310 cu. ft.

1—Chicago Pneumatic air compressor, 300 cu. ft.

1—Ingersoll-Rand air compressor, 220 cu. ft.

Sullivan air compressor, 110 cu. ft., portable.

1—Steel stiff leg derrick, 15 tons cap., 100' boom.

1—Lambert 3 dr. 9 1/2 x 12 steam hoist.

Barber Greene Model 62 loader.

Blaw-Knox complete central mixing plant.

Blaw-Knox complete ready mixing plant.

1 R. drill shaver, Model 50 complete.

Rex pumcrete outfit, Model 200, 190, 180, 160.

100 ton Mikado steam loco, standard gauge.

Allis Chalmers 10' cent. elec. pump, 3500 g.p.m.

2—Deck Saws 30 x 100 in. 32 x 100 x 10.

Butler 3 comp. steel bin, weigh batchers.

RICHARD P. WALSH CO.

30 Church St. N. Y. City

MACHINE TOOLS

BORING MILL, 84" Miles vertical, belt dr., 2 hds.

DRILL, 24" Sibley, upright mtr. dr.

GRINDER, 20"x144" Landis Plain Cylindrical, mtrzd.

GRINDER, 12"x36" Pratt & Whitney Surface.

GRINDER, 12"x30" Modern Plain Cyl. mtr. dr.

LATHE, 18"x6" Wickes heavy duty, production, quick change.

LATHE, 27"x24" Lodge & Davis, belt dr. pl. chg.

LATHE, 32"x20" LeBlond, q.c. mtrzd.

LATHE, 16" x 8" South Bend, belt dr.

LATHE, 12"—22" x 5" Barnes Sliding bed gap, belt dr.

MILLER, #4 LeBlond Univ. belt dr.

PRESS, #4 Federal Inc. 3" stroke, 35-ton cap.

PUNCH, 10" Beloit, #55 comb. cap. punch 1"x3/4" shear 7x44.

SHAPER, 70" Ohio, h.g. belt dr.

AIR COMPRESSORS

1052' Sullivan, angle com., belt driven.

868' Ingersoll-Rand, XCB, belt drive.

676' Ingersoll-Rand, XCB, belt drive.

528' Ingersoll-Rand, ER, size 14x12.

368' Worthington, belt drive, 12x10.

254' Chicago Pneumatic, 10x10, NSB.

215' Ingersoll-Rand, 10x8, ER.

202' Chicago Pneumatic, vert., 2-cyl.

173' Ingersoll-Rand, ER, 9x8.

173' Chicago Pneumatic NSB, 9x8.

92' Ingersoll-Rand, ER, 7x6.

MANY OTHER SIZES IN STOCK

THE O'BRIEN MACHINERY CO.

113 N. Third St. Mar 0727 Phila., Pa.

STEEL SHEET PILING